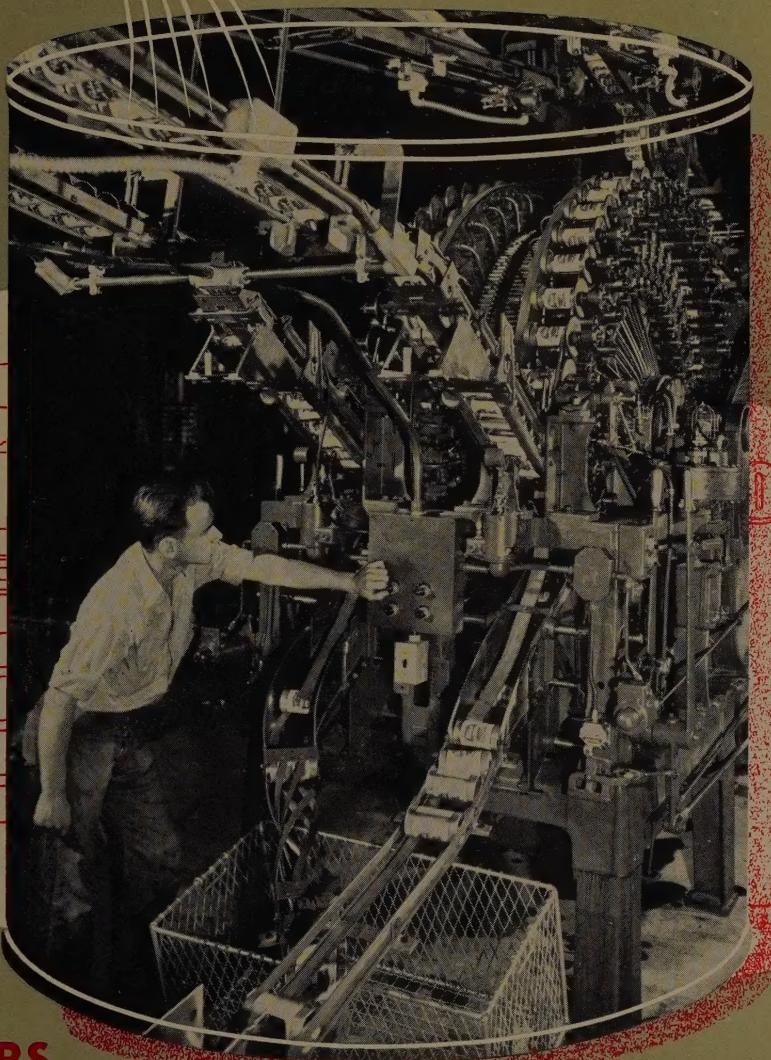


JANUARY 26, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



CONTAINERS . . .

fourth largest consumer
of steel in the U.S.—page 48



PRICE-CUTTING IN 1953?
Not Much, Say Executives, p. 37



SLICE MACHINE DOWN TIME
Good Scheduling Does It, p. 66

Eliminates OVERHOISTING FEAR

Enables Operators
To Do Better Work

YOUNGSTOWN
Safety
LIMIT STOPS

for Crane Hoists

This Limit Stop not only *disconnects* the motor from the line, but *stops* the motor quickly. On D-c cranes, where high hoisting speeds prevail, dynamic braking aids in bringing the hook block to rest.

Since this Limit Stop is operated directly by the hook block, stretching of the hoisting cables does not affect the tripping point. By removing the fear of an overhoisting accident, the YOUNGSTOWN Limit Stop enables the crane operator to do better work.

*A crane *without* a Youngstown is as risky as a boiler *without* a safety valve.

Easily applied to both new and existing A-c and D-c Cranes.

WRITE FOR BULLETIN 1032



THE ELECTRIC CONTROLLER & MFG. CO.
2698 East 79th Street
Cleveland 4, Ohio

YES



Almost Every Kind of Forging

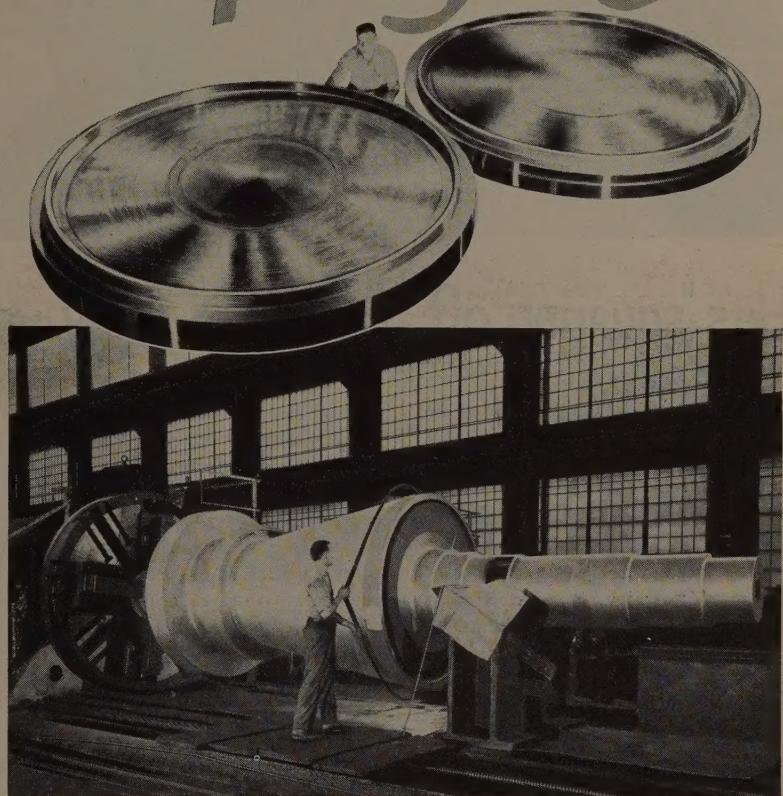
Not so long ago a
or spent several hours in one of
plants, and when he had finished
ked, "Is there any kind of forging
Bethlehem *doesn't* make?"

ell, yes, perhaps there are a few.
by and large, we just about cover
ield.

ou see, we're equipped to make
press forgings, almost everything
e medium-sized bracket, hammer
drop forgings, and many types of
alties. There isn't room here to
he scores of uses to which these
ngs are put. But take our word,
list would be very long indeed.

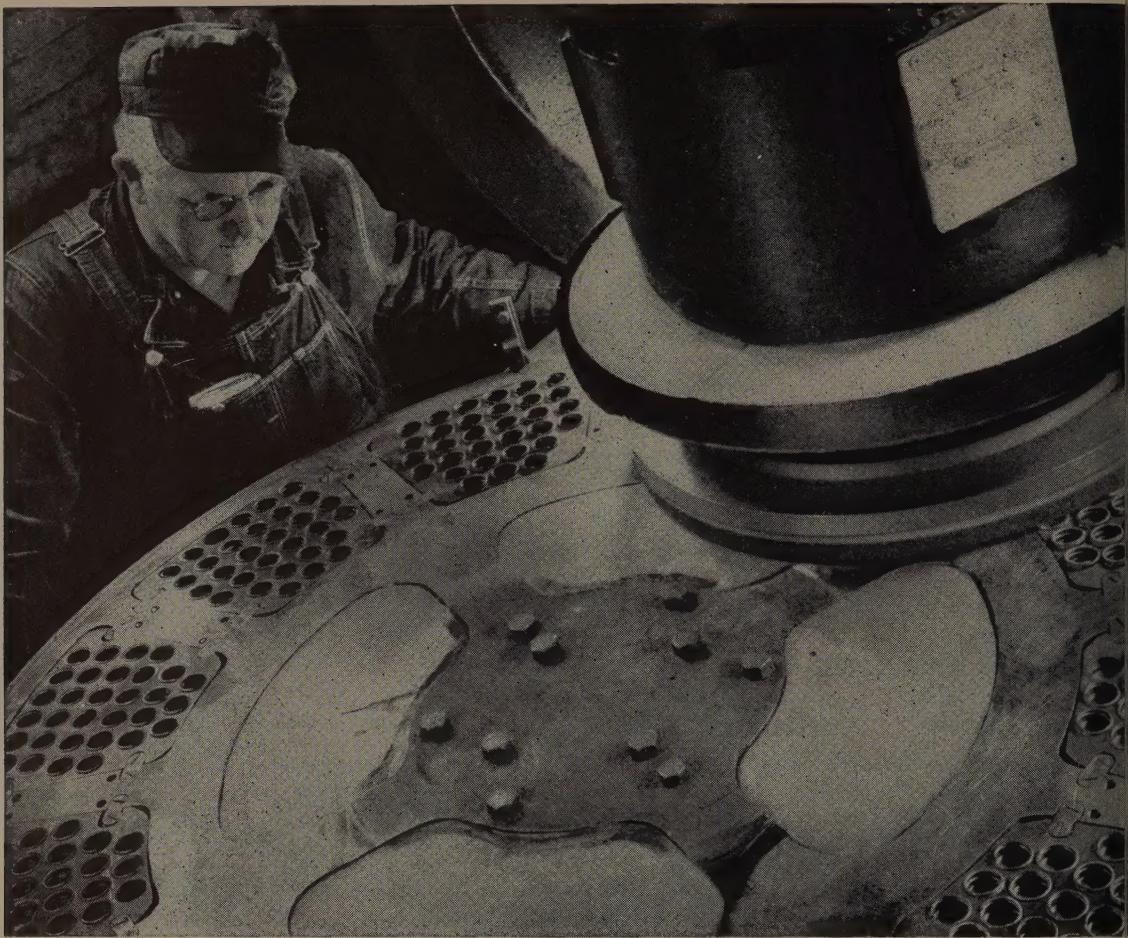
nd here's something else: our
nine-shop facilities match the forges
equipment in every way. Look at
picture of that hardened steel roll
piece weighing 21 tons. It was
h-machined in our Bethlehem
s. That kind of work requires
t machinists and first-class equip-
t. Both of these assets we have.

ethlehem would like very much to
usiness with you. Call us the next
you're in the market for large,
ium, or small forgings; we'll be
to co-operate in every way.



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast
Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



He's "squaring off" to square away your spring needs

This workman is "squaring off" spring ends on a huge grinding machine. This is one of the many precision operations that make Barium's Cuyahoga Spring Company an outstanding quality specialist in coiled wire springs and made-to-order wire specialties, including moulding clips . . . stamped clips that need no bolts, screws or nuts.

Not only will you benefit by Cuyahoga's specialization in springs, you'll also benefit because Cuyahoga is part of

Barium Steel Corporation. For Barium is a single source for your steel needs, controlling quality from blast furnace to end product . . . a team of companies providing industry with steel in many forms. No matter which Barium company handles your order, the finest engineering research and product development is available to you from Barium's staff engineering force.

Address your steel needs to Barium Steel Corp., 25 Broad St., New York City.



BOLTS
Bayonne Bolt Corporation



STEEL PLATE
Central Iron and Steel Company



PIG IRON
Chester Blast Furnace



CRANES AND HOISTS
Clyde Iron Works, Inc.



SPRINGS
Cuyahoga Spring Company



BOLTS AND NUTS
Erie Bolt and Nut Company



METAL STAMPING
Geometric Stamping Company



DROP FORGINGS
Globe Forge, Inc.



HEAVY FLAT DIE FORGINGS
Industrial Forge and Steel, Inc.



AIRCRAFT ENGINES AND PRECISION ASSEMBLIES
Jacobs Aircraft Engine Company



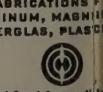
MARINE DIESEL AND GASOLINE ENGINES
Kermath Manufacturing Company
Kermath Limited (Canada)



STRUCTURAL SHAPES AND STEEL FABRICATIONS
Phoenix Bridge Company
Phoenix Iron and Steel Company



BARGES AND TUGS
Wiley Manufacturing Company

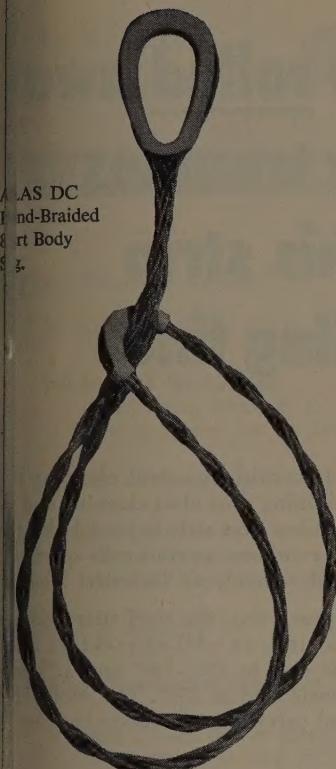


FABRICATIONS
ALUMINUM, MAGNESIUM, FIBERGLAS, PLASTIC

Barium
A coordinated effort of
16 companies working in steel
MILL PRODUCTS • SHAPES TO ORDER • END PRODUCTS

AS DC
Round-Braided
Part Body
S.

z.



complete line of slings to
fit every need

Three types of body are available: Atlas Round-Braided, Drew Flat-Braided, Monarch Single-Part. All are made to order any size for any job.

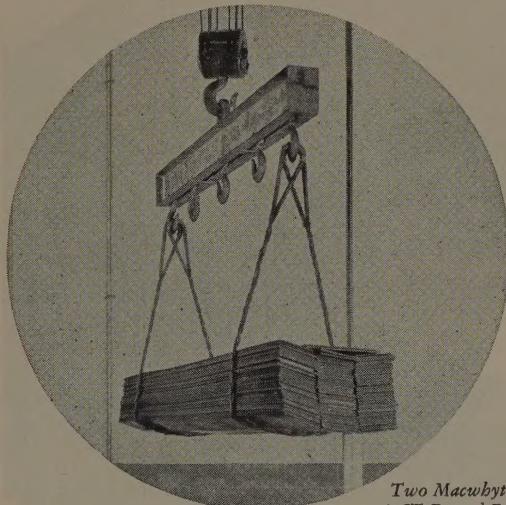
Our engineers will gladly study your needs and make recommendations.

Sling life goes up with "balanced braiding"

MacwhYTE's *Atlas Braided Slings*

There's longer life in an *Atlas Braided Sling* because of MacwhYTE's *balanced* method of construction: 1. Ropes are spliced endless before braiding. 2. Right lay ropes balance left lay ropes. 3. All ropes follow uniform spiral paths, assuring balanced tension throughout the sling body.

Greater flexibility, no kinking, no spinning, and longer sling life are all provided by MacwhYTE's "Balanced Braid."



Two MacwhYTE *Atlas* type
1-CT Round-Braided Slings
with 6-ton lifting beam
handling plate stock.

MACWHYTE SLINGS

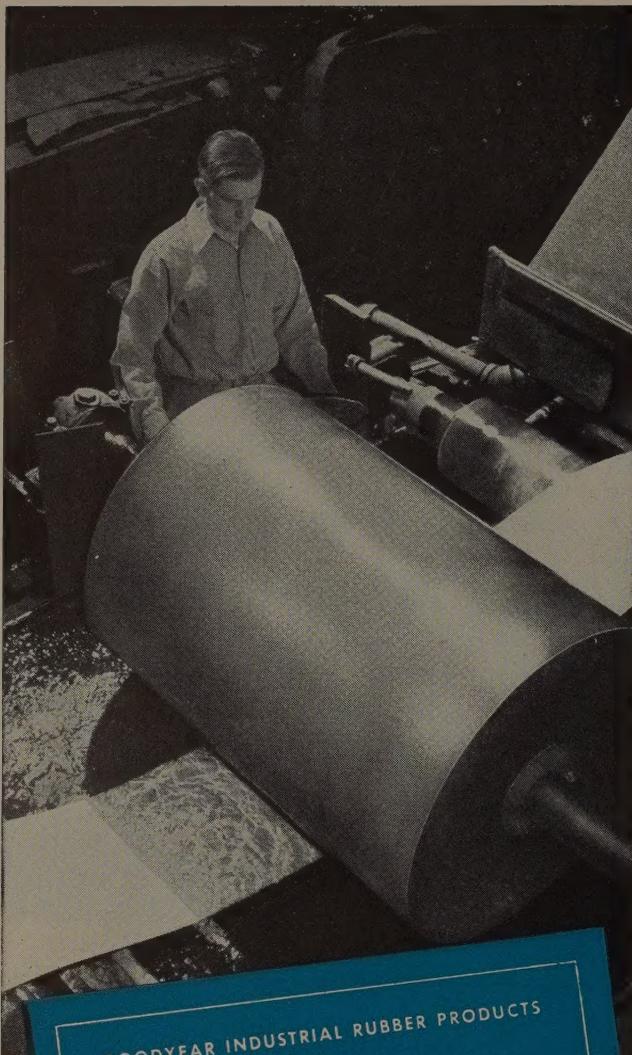
See the hundreds of slings
in new MacwhYTE Sling Catalog S-8

MACWHYTE COMPANY

Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cable, Safe-Lock Assemblies, Monel Metal and Stainless Steel Wire Rope. Mill depots: New York • Pittsburgh • Chicago • St. Paul • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.





They rolled away their troubles on this strip pickling line

ON this continuous steel cleaning line combining shot blast cleaning and pickling—stainless steel strip is passed along and under rubber covered rolls specified by the G.T.M.—Goodyear Technical Man.

During processing, the steel strip undergoes shot blasting, as well as pickling in sulphuric acid at 185°-190° and 12% in hydrofluoric acid at 150°. The rubber hold-down and carrying rolls rotate in these acid solutions.

Special rubber compounds, specified by G.T.M., are built into the roll covering to resist this heat and acid action. Result: longer life and more trouble-free service.

Goodyear's rubber rolls resist heat, chemicals, oil, abrasion, or other roll-killing conditions. Each covering is tailor-made to make the roll function as designed. "Spot bonding" process permanently bonds roll covering to the metal core.

Why not discuss your roll requirements with the G.T.M. now? You can reach him by writing Goodyear, Mechanical Goods Division, Akron 16, Ohio.

LOOK FOR YOUR GOODYEAR INDUSTRIAL PRODUCTS DISTRIBUTOR in the Yellow Pages. Your Telephone Directory under "Rubber Products" or "Rubber Goods." He handles Hose, Flat Belts, V-Belts, Molded Goods, Packing, Tank Lining, Rubber-Covered Rolls, up to the world's highest standard of quality.

GOOD YEAR

THE GREATEST NAME IN RUBBER

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Net

This Week in Metalworking

STEEL

Vol. 132 No. 4

Jan. 26, 1953

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WHAT'S
THE BEST WAY TO
STRIP PAINT FROM
METAL PARTS TOO

LARGE TO
BE SOAKED
IN TANKS?

See Page 3



Oakite's New FREE Booklet on Paint Stripping

answers many questions that will lead you to better stripping procedures. You'll want to read more about:

What's the best way to strip large areas of structural metal where a steam supply is available? *See page 5.*

What is the best method when steam is not available? *See page 7.*

What is the cheapest way to strip metal parts in large volume? *See page 9.*

What are the best ways to prepare stripped surfaces for repainting? *See page 11.*

What strippers are best for removing oil-base paints? . . . Synthetic enamels, alkali-resistant plastics or resin-based paints? . . . Japans, wrinkle finishes, nitrocellulose lacquers, alkyds, phenolics and ureas? *See page 12.*

FREE For a copy of "How to STRIP PAINT" write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

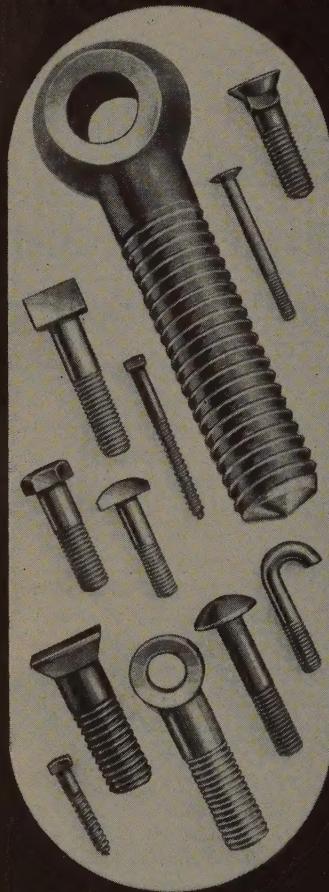
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SPECIALIZED INDUSTRIAL CLEANING
MATERIALS • METHODS • SERVICE
MADE WHERE YOU PAY OFF

Technical Service Representatives Located in Principal Cities of United States and Canada

THREADED SPECIALTIES

EYE BOLTS

by an
exclusive method



Among Pawtucket's many specialty products, these lower-cost eye bolts or "swing" bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket eye bolts are made in standard sizes $\frac{1}{4}$ " and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit.

BETTER BOLTS SINCE 1882

PAWTUCKET
"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street - Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

Behind the Scenes...

Oil Shortage

There have been some very interesting things going on around this office in the last few weeks, and the result is that we're just about out of midnight oil. It seems that the editors depleted the supply during November and December as they put in hour after hour on the Metalworking Yearbook issue. Then the first three floors of the Penton building were brightly lighted every night the last two weeks in December as the presses pounded out the 17,280,000 pages that were printed for that issue. By then we'd put in a rush order for a couple more barrels of #1 midnight oil and they arrived just in the nick of time. Because now the circulation department has turned into a bunch of night owls, and the south wing of the 8th floor looks like Broadway every night. And the reason is very gratifying to all concerned. The number of new subscriptions that have flooded in over the turn of the year has broken all records, so if you are one of the hundreds of new subscribers and there has been any delay in getting your copies, please be patient. Fay Curtis and Alice Dailey, guardian angels who hover over and protect your subscription stencil as it is punched and tabbed and printed and filed, are able to see over the top of their desks now, and we've also run in some temporary help to relieve the log jam.

Frying Pan To Fire

But it may also just be the calm before the storm. With the announcement last week that every subscription to STEEL is entitled to one copy of the new Specifications Handbook, the mailman is starting to groan with anguish from the weight of his bag the last few mornings, as he carts in new subscription orders by the hundreds. Hold your hats, Fay and Alice, here we go again!

Help! Help!

Incidentally, this rush of new subscriptions has made it very embarrassing for circulation manager Rand Ebersole. Every year he has to get

out his crystal ball and come up with a good guess on how many Metalworking Yearbook issues should be printed. Everyone agreed he had made a very fine guess but that before folks around the industry had copies and decided they just had to have one. The result is we're completely out, but we could use a few to fill orders that we're holding in our little fat hands. Here a proposition that we've been authorized to make to you by friend Ebersole. If you are through with your copy of the January 5 Metalworking Yearbook issue and it is in relatively good shape—we'll buy it back from you for \$2.00 and pay return postage. Just ship it to good ol' Shrdlu and we'll get a check off to you pronto.

Service With a Smile

If you happened to see the Paxson Machine Co. ad a couple of weeks ago, you were probably intrigued as we were with the little footnote we at the bottom of the page, asking "Do You Fly?" It went on to say that they maintain a 2800 ft. runway and clubhouse two miles west of Salem for the convenience of all sundry and that they will meet any plane if you just let them know you're coming. Our curiosity couldn't stand it, so we called H. D. Paxson, president of the company, to see how this really worked out. "It's well," says Mr. Paxson, "we'll average three or four planes a week landing out there to see us, and we're happy to let Deming, Muller, National Sanitary, Electric Furnaces or others in the Manufacturers Association use it too." We were talking about this with Harold Rowell who helps encourage Mr. Paxson to tell you good people about his mill equipment through the advertising pages of STEEL, and he swears he's going to try it out on his next visit down there—if, in the meantime he can find a plane—if, in the meantime he learns to fly!

Shrdlu

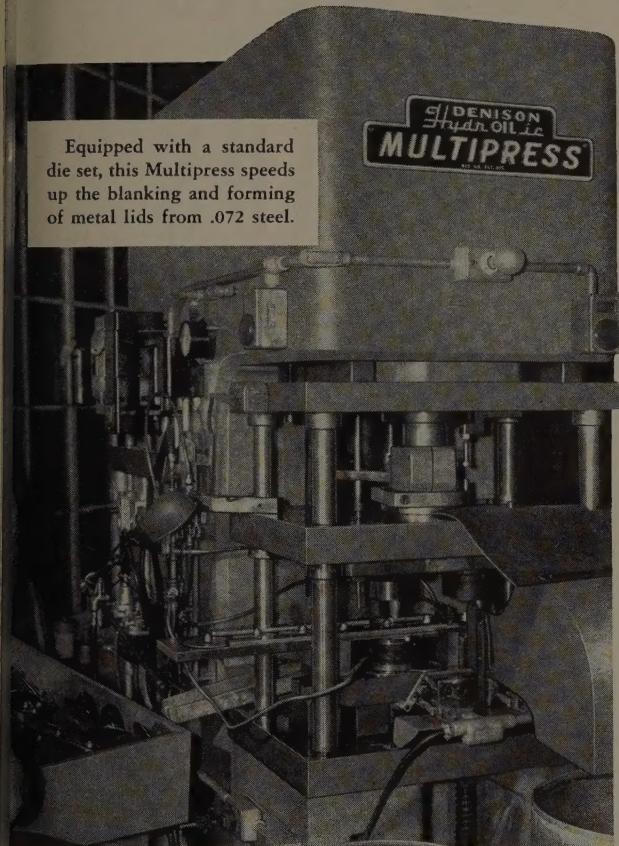
'Blanking and Forming



with

MULTIPRESS™

Equipped with a standard die set, this Multipress speeds up the blanking and forming of metal lids from .072 steel.



Multipress offers *lower* impact on dies . . .
lower ram velocities.

Exact control of press tonnage cuts die wear,
permits more grinds per die.

Infinitely adjustable ram stroke, plus easy
inching action permits quicker die changes.

Fully adjustable tonnage, ram speed, and stroke
length adaptable to a wider range of work.

Multipress offers one-ton to 50-ton capacities
. . . eight frame sizes . . . bench and floor models
. . . maximum accessibility for special tooling and
auxiliary equipment.

Standard Multipress accessories available for
many specialized production needs.

Write today for full information on Multipress.

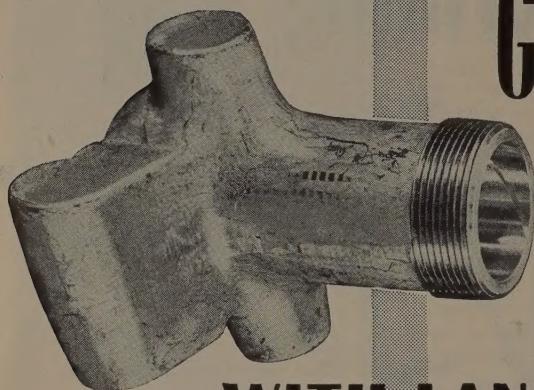
See it in Action

Denison's newest film, "Blanking & Forming with
Multipress" brings you 10 minutes of fast action on several
actual production jobs . . . shows the how and why of methods and
principles . . . highlights important press control features — and gives
you a close look at the fastest hydraulic press operation you've
ever seen. Your Denison Multipress representative can show you
this new 16mm sound film now, or you may write direct to —

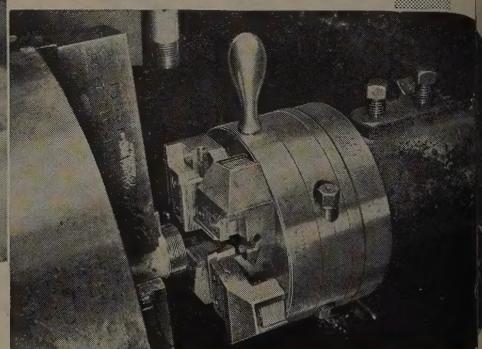
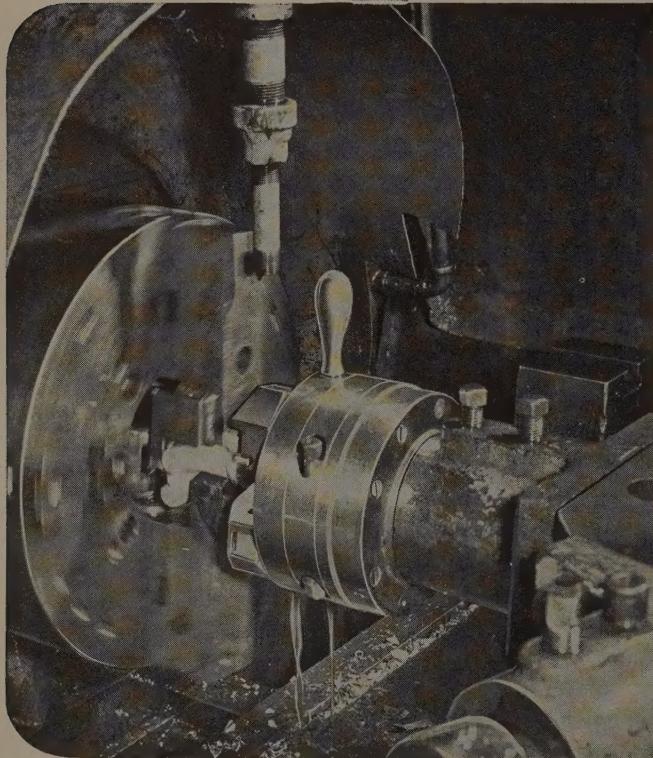
The DENISON Engineering Company

1163 Dublin Rd., Columbus 16, Ohio

DENISON
HydroOILics



GOOD LEAD on THREADS WITH LANDMATIC HEADS



The permanent nut action of Landis Tangential chasers assures accurate pitch threads throughout these crown port closing bodies used in bottling machinery. Landmatic Heads using Landis Tangential chasers cut $1\frac{1}{8}$ " 16 pitch USS threads $1\frac{1}{2}$ " long on naval bronze forgings at the rate of 50SFM. Actual threading time is about 5 seconds.

The permanent throat feature of the chasers maintains initial cutting accuracy throughout the entire life of the tool. When the chaser is reground, no grinding is done on the throat. Thus the throat angle and nut action is never altered, and the chaser consistently produces threads accurate for lead. Write for Bulletins F-80, F-90 & A-50.

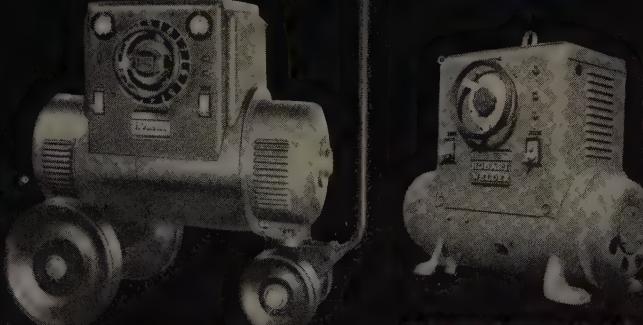
These photographs were taken in the Machine Manufacturing Division of the Crown Cork & Seal Company, Inc., Baltimore, Maryland.



LANDIS *Machine Co.*

WAYNESBORO • PENNSYLVANIA • U. S. A.

“ONE OF THE WORLD'S LARGEST BUILDERS OF ARC WELDERS”

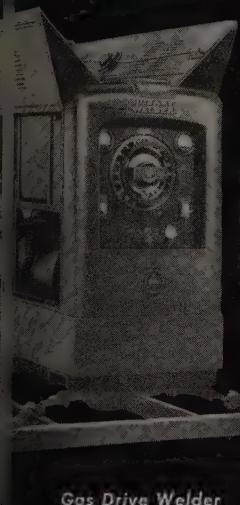


Electric Drive Welder

“Bantam Champ” Welder

arc welders

A Hobart Welder, with its advanced engineering and rugged, heavy duty construction, is best qualified to give you the lower costs and constant performance so essential to profitable production welding. If you doubt it, just check a Hobart point-for-point with any other machine on the market—or better still, just ask any Hobart owner. Mail coupon for full details.



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electrodes

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Use coupon and mail today

Hobart Brothers Company

BOX ST-13, TROY, OHIO

● HOBART BROTHERS COMPANY, BOX ST-13, TROY, OHIO

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 Gas Drive Welder. Send me Welder Catalog Electrode Catalog
 Accessory Catalog.

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FIRM _____

ADDRESS _____



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“How to get Better Welds.”
Valuable new vest pocket booklet.



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lurking like a cat....
fire is ready to pounce.
In flammable liquids,
electrical equipment, record
vaults. Your surest protection
is a Kidde Fully Automatic
CO₂ Fire Extinguishing System.



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the "Yellow Pages" for your KIDDE dealer

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Walter Kidde & Company, Inc.,
160 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.

LETTER TO THE EDITORS

Scholars Use STEEL



We have been receiving STEEL past year and value it very high. It is in constant use by the students at the Milwaukee School of Engineering.

Annually, there are better than 2,000 young men taking our courses. We have been over 48,000 students who have attended the Milwaukee School of Engineering in its 50-year history.

A. C. [unclear]
Milwaukee School of Engineering
Milwaukee

Research in Ferrosilicon

One large use for ferrosilicon is in its ground state for "heavy media separation" (sink-and-float process). This process is used extensively in iron ore.

We are interested in knowing what potential for this type of ferrosilicon. Would you have consumption figures give us an idea of how much is used in heavy media separation?

Any information you can give us or suggestions as to where we could get some help would be greatly appreciated.

John H. [unclear]
senior marketman
Carborundum
Niagara Falls

• We suggest you get in touch with E. W. Davis, director, Mines Department Station, University of Minnesota, Minneapolis.—ED.

Historic Reference

Perhaps by chance, you may have a few copies in your file of mine from the Mar. 18, 1926, issue, "Iron Trade Review," pages 703 to 705. An article by E. C. Kreutzberg, Director, River Steel Co., Chester, Pa.

Vincent [unclear]
consulting [unclear]

• We have no more issues of the Mar. 18, 1926 issue of Iron Trade Review in stock.—ED.

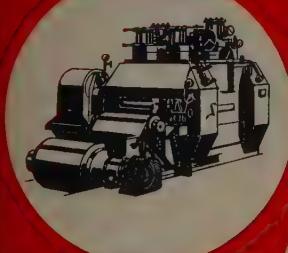
Looking Abroad



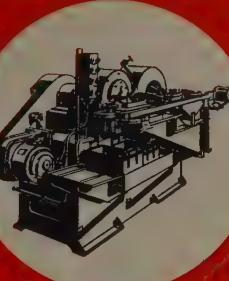
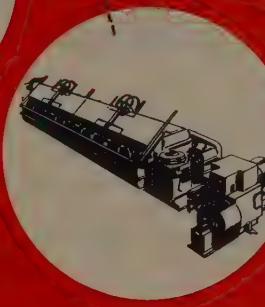
Our company would greatly appreciate your help in solving the following problem. One of the firms which represent manufacturers of a piece of equipment of interest to metalworking

Continued on following page

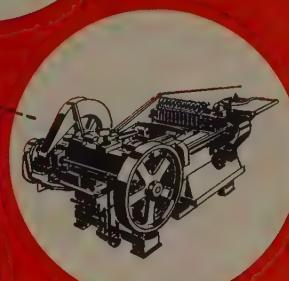
5 KINDS OF WATERBURY FARREL ANSWERS TO YOUR MASS PRODUCTION PROBLEMS



SPECIAL MACHINERY — Sengzimi Mills • Small Arm Ammunition Machines • Collapsible Tube Machines • Coining Mills, etc.



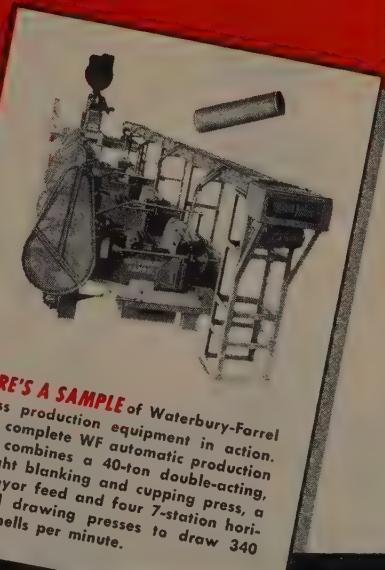
(OLD PROLESS BOLT & NUT MACHINERY — Headers (all types) • Brevi Machinery • Trimmers • Thread Rolling Machines • Slotters • Nut Formers and Tappers, etc.



POWER PRESSES — Crank, Cam and Toggle; also Rock and Pinion Presses • Eyelet Machines • Multiple Plunger Presses • Horizontal and Hydraulic Presses, etc.

ROLL MACHINERY — Rolling Mills. Strip, Rod, Wire Flattening, (For Ferrous and Non Ferrous Metals) • Also Slitters • Straighteners • Cut-off Saws • Coilers • Winders, etc.

WIRE MILL EQUIPMENT — Continuous Wire Drawing Machines (Upright Cone and Tandem) • Wire Flattening Mills • Chain Draw Benches • Pointers • Swingers • Bull Blocks • String up • Machines • Spoolers, etc.



HERE'S A SAMPLE of Waterbury-Farrel mass production equipment in action. This complete WF automatic production unit combines a 40-ton double-acting, upright blanking and cupping press, a conveyor feed and four 7-station horizontal drawing presses to draw 340 zinc shells per minute.

Within These Basic WF Equipment Lines, Individual Machines Are Custom-Engineered For Specific Applications

If your metal-working machinery problem falls into any of these five groups, there are good reasons for looking to Waterbury Farrel for an answer.

There's Waterbury Farrel's continuing engineering research with more than a century of machine building experience to draw upon, his results in soundly designed and thoroughly tested features which improve production.

There's Waterbury Farrel's world-wide reputation for rugged, long-lasting construction. This gives you the assurance that WF machines are built to provide long years of uninterrupted production.

Waterbury Farrel can custom-engineer special equipment or adapt standard machine to fit your specific problem.

For further information, write for free booklets on any of the machines mentioned on this page or contact your nearest WF office.



WATERBURY FARREL FOUNDRY & MACHINE CO. • WATERBURY, CONN.
Offices: Chicago, Cleveland and Millburn, N. J.

LETTERS

Concluded from preceding page

firms with sizable capacity and who use a conveyorized paint spraying department in their operation. We are engaged in acquainting firms of this type described above, in foreign countries with our equipment.

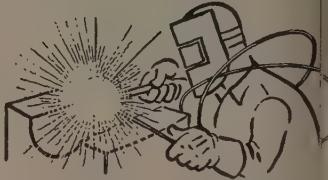
We wonder, therefore, whether magazine, or a source known to us has made a survey of the larger metalworking firms in foreign countries with names and general descriptions of products manufactured.

If such a survey or such a listing is available, we would be most interested in securing the same.

F. L.
A. J. Aldorf
Chicago

• A good source for names, addresses and some general information about foreign metalworking companies is "England's Coal, Iron & Steel Directory" published by "The Iron & Coal Trade Review," 49 Wellington St., Strand, London, W.C.2, England. You may also check the nearest local field office of the U. S. Department of Commerce for pamphlets "Metalworking Plants and Shops" covering the countries which you are interested.—ED.

Way To Double Die Life



May we have your permission to print the article "Welding Doubles of Forging Dies" (Sept. 8, p. 86). We'd like to have a number of tear sheets of that article if they're available.

Arthur L. Fink
Eutectic Welding Alloys of New York

• Tear sheets are sent. You may have permission to reprint the article.—ED.

About Extrusion

We read about three steel fabrication processes recently and believe we have seen something on them in STEEL. On the other hand, we have been unable to find any articles and wonder if you could help.

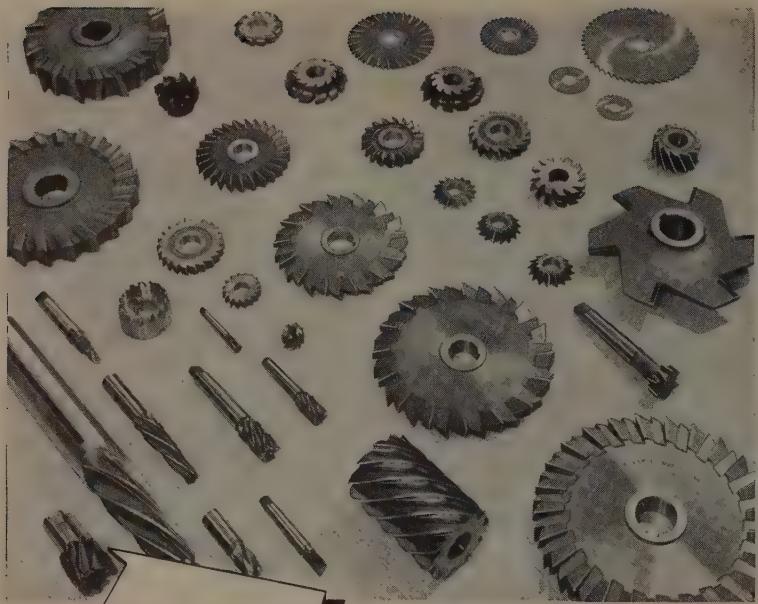
The three processes in which we're interested and for which we'd like to have references are:

Anderson Forming by Drawing
ess

Cold-extruding process for steel
Hot-extruding process for steel

Charles M. Wilson
sales research manager
Western Auto Supply Co.
Kansas City, Mo.

• For cold extrusion see Jan. 1, 1950, p. 203; Jan. 1, 1951, p. 430; and Oct. 21, 1952, p. 71. For hot extrusion see Jan. 21, 1952, p. 79 and Mar. 17, 1952, p. 88. We can find nothing on the Anderson Forming by Drawing Process.—ED.



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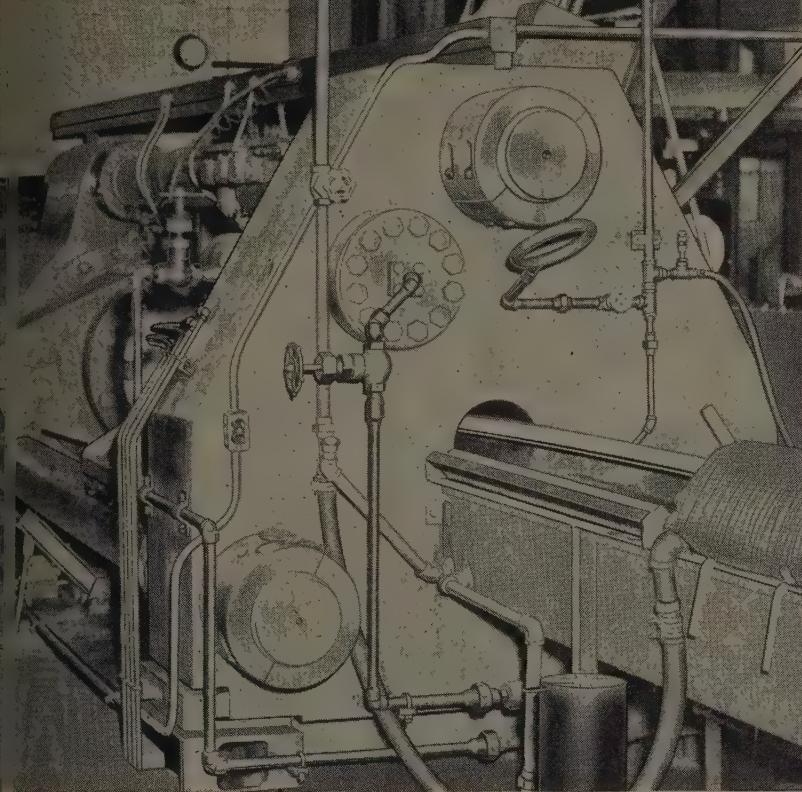
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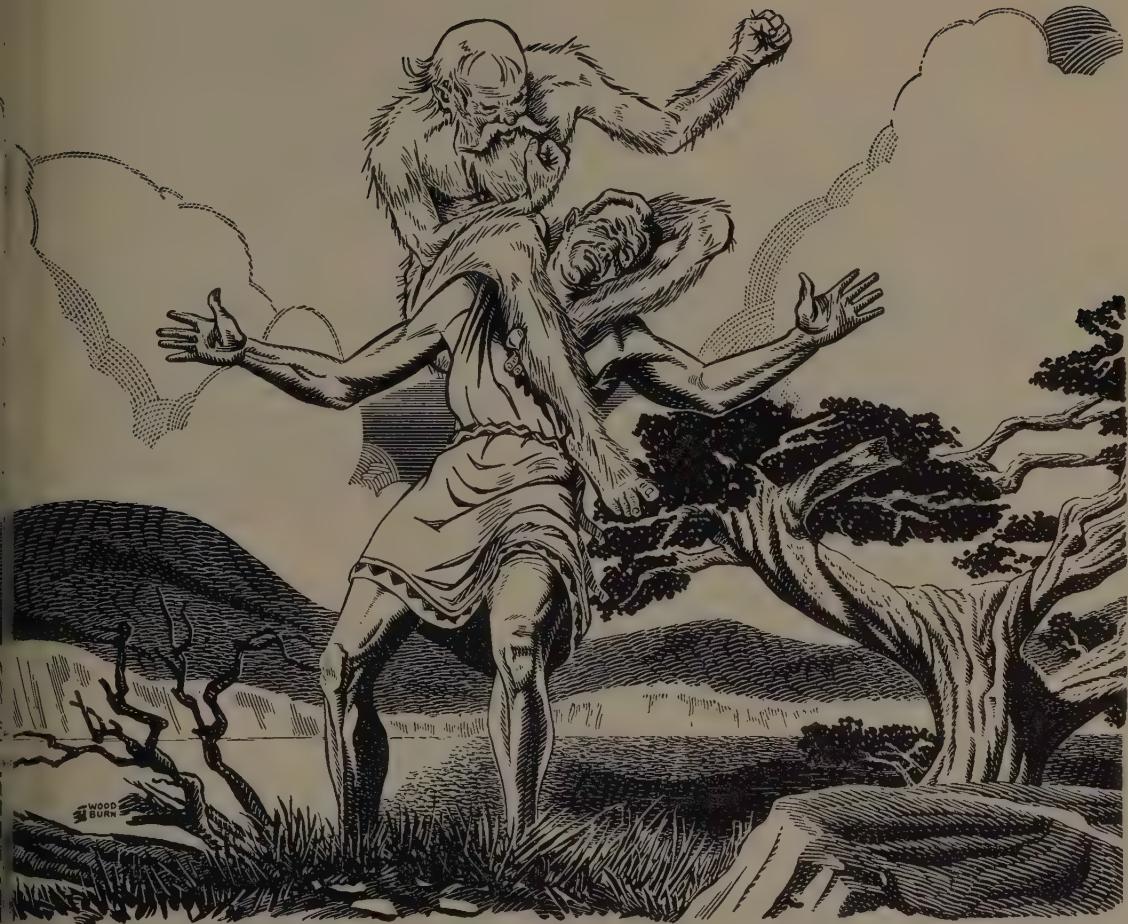
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Sailor Beware! The Old Man of The Sea!

WHO has not read of Sinbad, as told in the Arabian Nights by glamorous Scheherazade?

Shipwrecked on a strange island, the unfortunate sailor came upon a weak old man. Moved by compassion, Sinbad took the feeble fellow on his back, carried him over the brook, gathered fruit and fed him. But when Sinbad asked him to get down, the old man refused, wrapping his arms about his neck, almost strangling him.

The sailor fainted and fell down, yet the old man clung ever closer. He rained blows on Sinbad, driving him about without rest, to pick fruit and do his pleasure. This went on and on, until the desperate sailor made wine from wild grapes to appease his own plight. One day noting Sinbad's pleasure, the old man snatched a gourd of

wine and gulped it down. Completely drunk, he loosened his grip and Sinbad threw him off. Saved by a passing ship, his rescuers said, "You are the first ever to escape strangling by the Old Man of the Sea".

Dating back hundreds of years, the Old Man is an allusion familiar to everyone. He is a warning figure today. Our nation, surviving the storms of two world wars, wanders down strange ways. With kindly intent and glorying in its own strength, America is tempted to shoulder the Old World and its age-worn problems. But weak and feeble as the Old World appears to be, let us beware! How easy to assume a burden which would quickly exhaust our strength, strangle us as a nation, and in the end leave the world as weak and exhausted as it was before our foolish undertaking!

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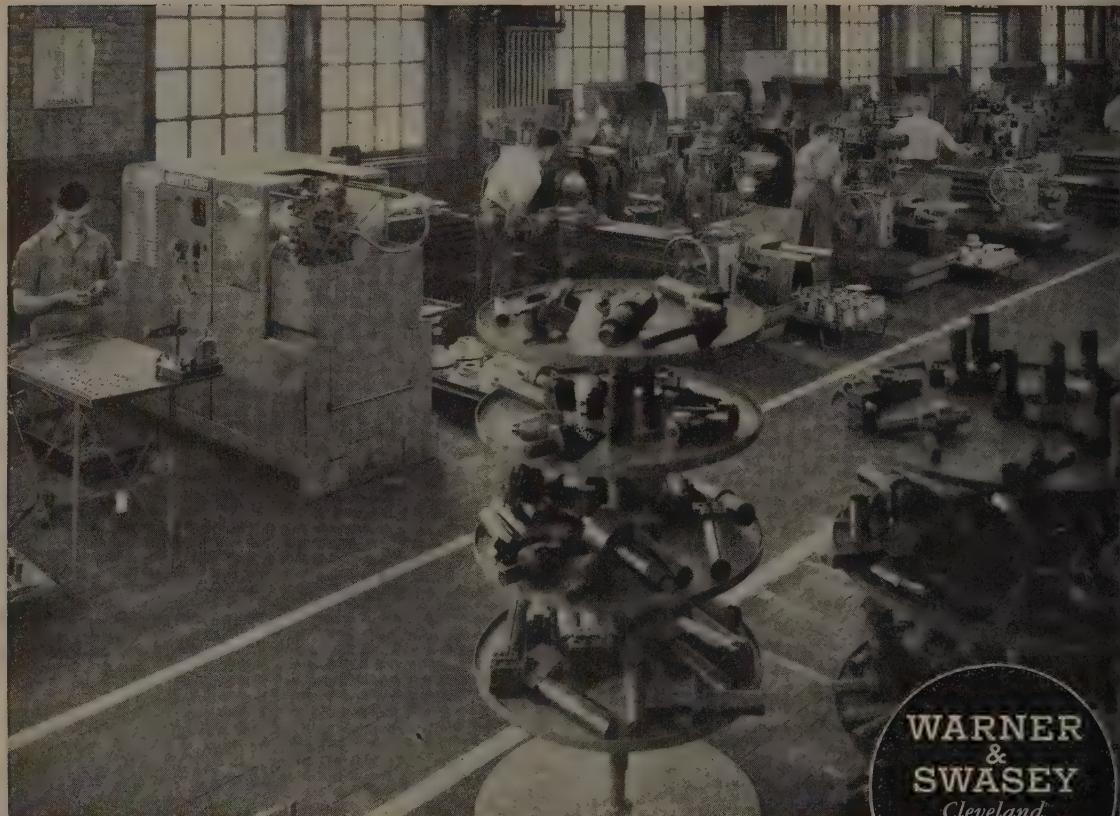
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wrong
with this
picture

• Nothing at all! But chances are any veteran shop man will instantly ask, "What's the idea of having an 'Automatic' in the turret lathe department?"

The "idea" is simply this: Warner & Swasey 1-AC Single Spindle Automatics can handle many of your regular small and medium lot runs *more profitably* than your hand-operated machines.

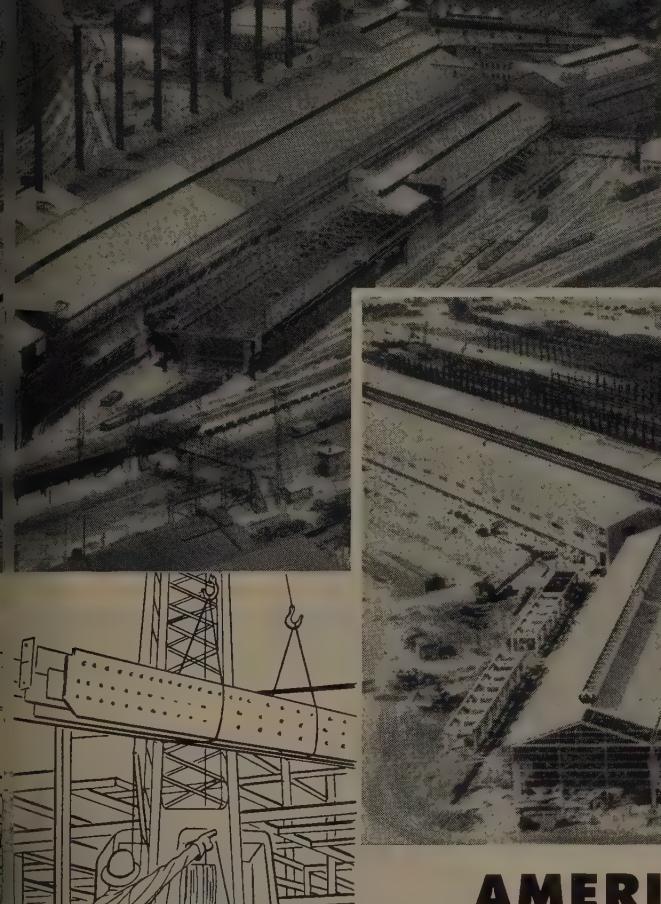
That's because the 1-AC operator can change setups quickly for the job at hand. There are no cams to change—he simply re-adjusts trips for feed, speed and stroke controls. And, on certain jobs, one man on a 1-AC can turn out more work, of more uniform accuracy, than two men on hand-operated machines.

To find out whether 1-AC Single Spindle Automatics fit into your production picture, call in your nearest Warner & Swasey Field Representative. He'll study your jobs and methods and advise you correctly.

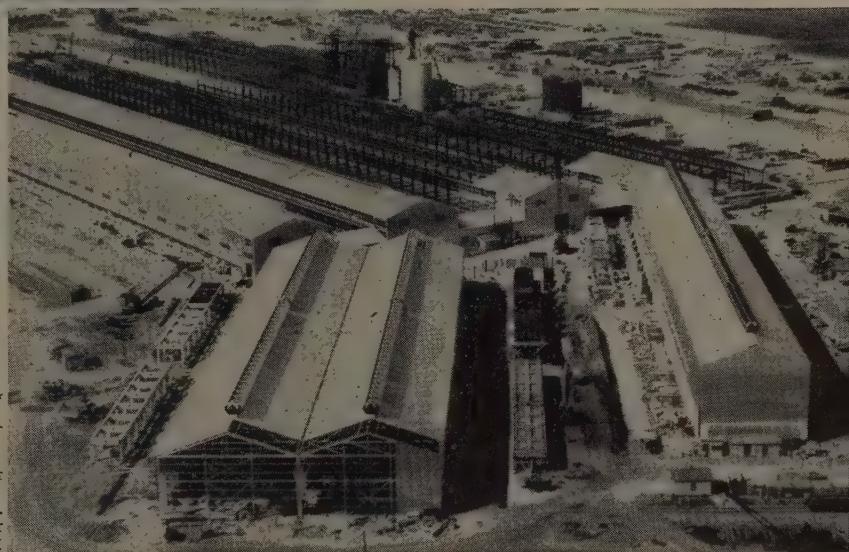


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For full information and literature on Crucible Hollow Tool Steel, call your nearest Crucible warehouse today... or write for brochure describing this new product! Advertising Dept. S, Crucible Steel Company of America, Chrysler Building, N. Y., N. Y.

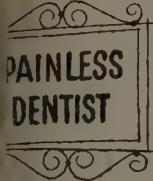
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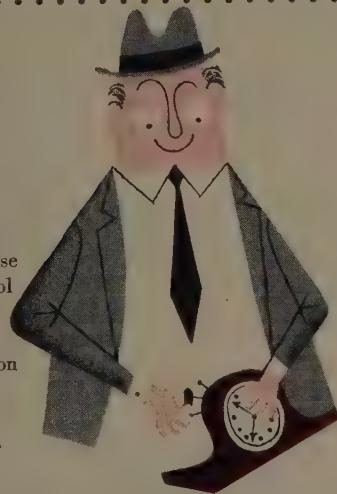


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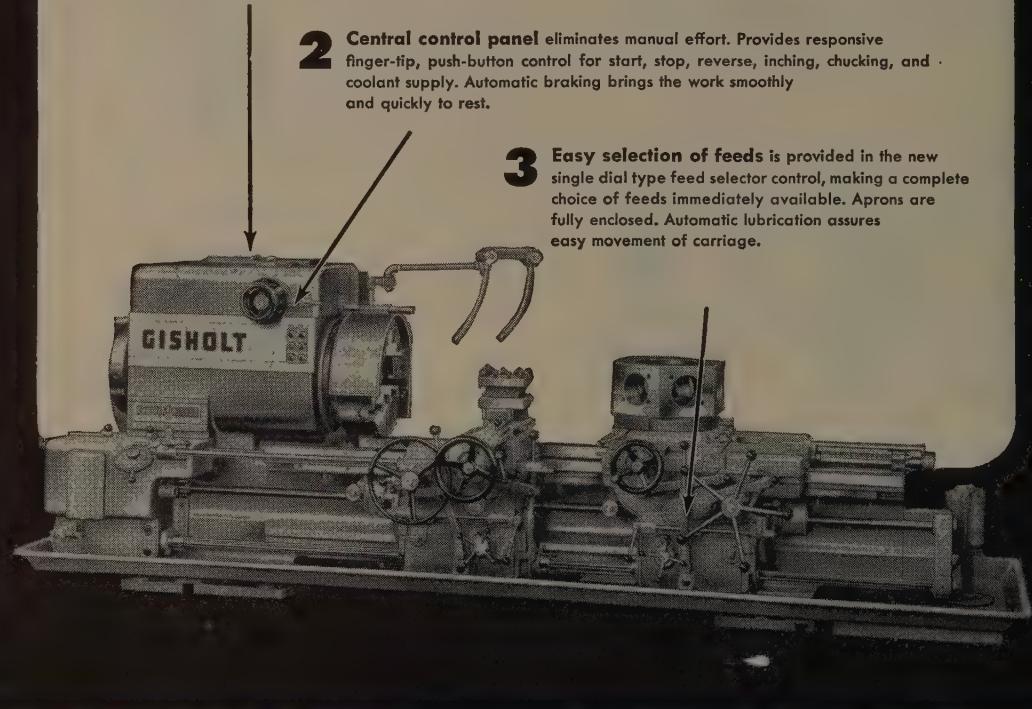
This 21,000 lb. machine requires no more operating effort than turret lathes $\frac{1}{2}$ its weight. Despite its great power and rigidity for heavy-duty work, the new Gisholt 4-L is so fast and responsive, it can handle light work of both large and small diam-

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3 **Easy selection of feeds** is provided in the new single dial type feed selector control, making a complete choice of feeds immediately available. Aprons are fully enclosed. Automatic lubrication assures easy movement of carriage.



The new Gisholt 4-L Saddle Type Turret Lathe provides 31 $\frac{1}{8}$ " swing over the ways, 27" swing over carriage wing, 9 $\frac{1}{2}$ " to 12 $\frac{1}{2}$ " spindle bores and 63" longitudinal working travel of turret carriage to

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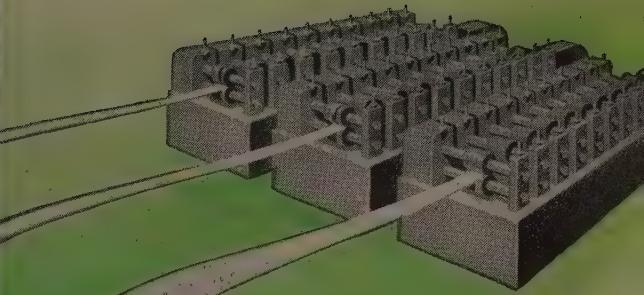


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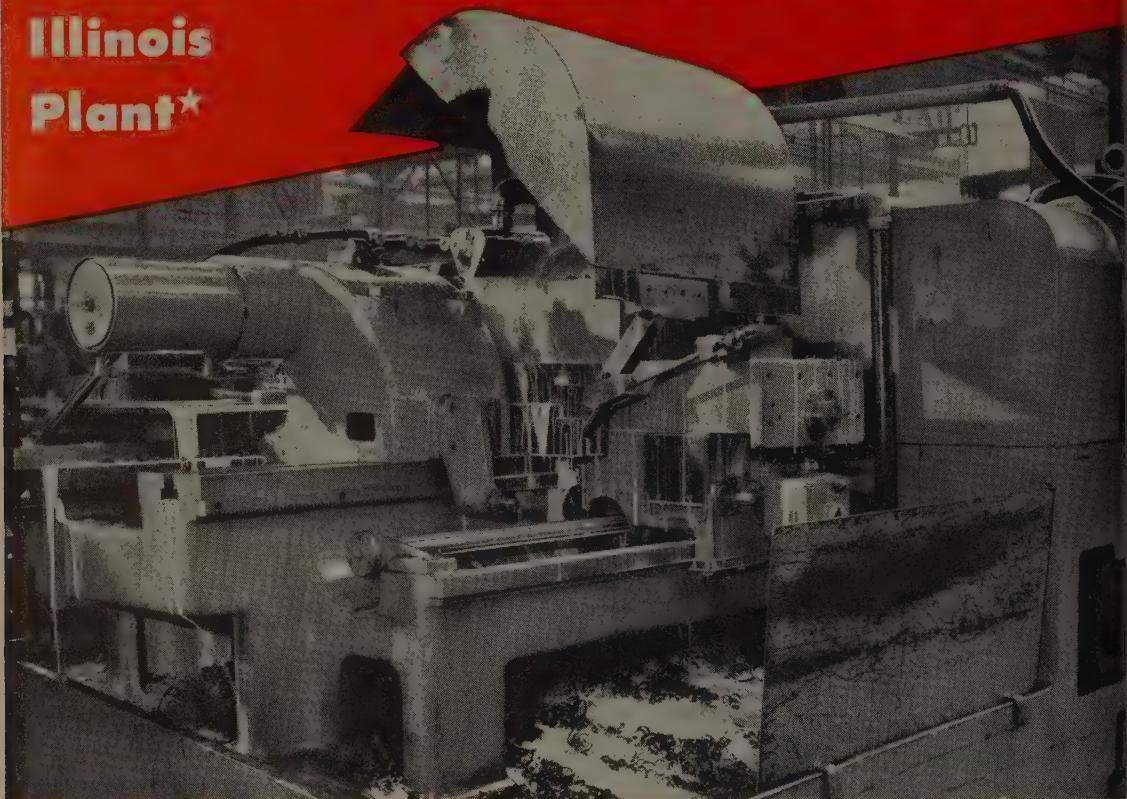
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*Name on request

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Last year, for instance, circumstances forced a two-month shutdown of the plant, and the emulsions of *Texaco Soluble Oil HW* were left standing in tanks and lines. When production was resumed, the operators found the Texaco emulsions still in satisfactory condition. There was comparatively little separation, little odor problem, and no wholesale cleaning of tanks or lines was necessary.

Here you have proof of the stability for which emulsions of Texaco Soluble Oils are famous — stability that means better cooling and lubrication, cleaner plant, longer tool life, lower oil consumption and maintenance costs.

Why not enjoy these benefits in your plant? There is a complete line of *Texaco Cutting, Grinding and Soluble Oils* to enable you to do all your machining better, faster and at lower cost. A Texaco Lubrication Engineer will gladly advise you. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



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FOR FASTER
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January 26, 1953

No Tax Cuts Soon

Don't count on a general tax reduction this year. In appearing before the Senate Finance Committee, which unanimously approved his appointment as secretary of the treasury, George M. Humphrey made it clear that a balanced budget is the first objective of the Eisenhower administration. He does say that the excess profits tax is in principle a "bad law." His department plans a thorough study of the whole tax structure because the new treasury secretary believes "our tax burden is heavier than the country can bear for any extended time." But such a survey won't come soon.

Fireworks in Congress

Fireworks are coming up in Congress over the government's participation in business activities. Several bills introduced in the new Congress seek liquidation of the RFC, and a new proposal by Rep. Ralph W. Gwinn (Rep., N.Y.) calls for a constitutional amendment to prohibit the U.S. from engaging in any business—professional, commercial, financial or industrial enterprise—except as specified in the Constitution, which isn't very much. That supplements the Ferguson Bill which calls for an investigation of government-owned business enterprises with the object of discontinuing them, turning them over to states or turning them over to private industry.

Defense Agencies Mark Time

Activities in the defense agencies are still decidedly slow. One move that would have been important was killed just before President Eisenhower took office. That was the proposal to increase the steel allotments for consumer durables for the second quarter from 70 to 90 per cent of the base period. NPA officials and Ex-Defense Mobilizer Henry H. Fowler chopped it down with the argument that the new President may have a program requiring the surplus steel.

Matter of Money

Average compensation of top executives rose 5 per cent in fiscal 1951-52, says American Management Association. Gross average weekly earnings of manufacturing hourly workers climbed 9 per cent in calendar 1951 over 1950. Middle management people—those between the top policy-making and first-line supervisory jobs, earned an average of \$12,000 in fiscal 1951-52.

What Makes an Executive?

Do your company's executive personnel have the six essential qualities? According to John Neukom of McKinsey & Co., San Francisco, a man of executive caliber should have: Energy, enthusiasm and drive; excellent mental equipment; imagination; a sense of humor; attractiveness to others; and emotional stability.

Just in Case

One reason why Republic Steel Corp. will market steel kitchens under its own name will be to have an assured outlet for at least some of

its steel production in case times get bad. Republic President Charles M. White says: "We have overshot the mark by building, in three or four years' time, steel capacity which should have been added in a more orderly way . . . In only four peace time years, out of the 67 for which records exist, has the steel industry averaged 90 per cent operations. All four of those years have been since the war."

Go West and South, Young Men

Manufacturing industry is continuing a trend to move from the East to the South and West, particularly California and Texas. A Bureau of Labor Statistics study points out that manufacturing employment in the East has not changed much, while employment in other areas has risen sharply, except in the Great Lakes region where the pattern is mixed. Despite the shift, New York, with 5.8 million workers, is still the leading state with nonfarm employment.

More Power

Some 8.5 million more kilowatts will be added to the nation's generating capacity in 1953, compared with 6.1 million in 1952. As of last October, the installed capacity was 79.7 million kilowatts. You can expect some serious power shortages in 1953, notably in the Pacific Northwest, but the problem won't be alarming in most other industrial areas.

Straws in the Wind

A mere 25 U.S. Steel Corp. employees on the railroad at the Ohio Works in Youngstown took a wildcat strike last week and idled 8000 to 10,000 at the Ohio and McDonald plants which had to close down five blast furnaces, 14 open hearths, a bessemer unit and primary mills . . . An amendment to the armed services procurement regulations dealing with Air Force contract termination will be out in a few days . . . Also out in a few days will be an Office of Defense Mobilization study of the steel industry which will point out some areas where more finished steel would be needed in the event of full mobilization.

What Industry Is Doing

Prices will hold or rise slightly in 1953, predict 82 per cent of 1152 metalworking executives queried by STEEL (p. 37) . . . Foundry owners are wondering if their recent pass-through on prices will completely pass through (p. 38) . . . The Plant Maintenance Show in Cleveland reveals that manufacturers are showing considerably more interest in industrial housekeeping; maintenance costs may reach \$17 billion this year (p. 39) . . . Nail producers are seeing their prices wobble as supply oversteps demand (p. 40) . . . Sales of the drop forging industry in 1952 rounded off at \$600 million and may improve this year (p. 41) . . . More things will go into more different kinds of metal containers in 1953 than ever before; the container industry is currently the fourth largest consumer of the nation's steel (p. 48).



Remember how you longed for air conditioning last summer?

I swore you'd never go through another summer without air conditioning. Now—today—is the time to do something about next summer. Here's why:

A Westinghouse Contractor isn't rushed now. His men install your new unit faster, better . . . without overtime. He will save you money. And he will do the work in it suits *you*—without disrupting your business.

All pay to select Westinghouse equipment because:

Westinghouse costs less to operate. Its refrigerant-cooled system saves on electric power and upkeep. Its hermetically sealed design means less maintenance, fewer service calls.

Westinghouse gives better performance. Only Westinghouse designs and builds all components. This means smoother operation and longer life, because all parts have been precision-built to work together.

YOU CAN BE SURE...IF IT'S

Westinghouse

AIR CONDITIONING

Westinghouse has a full equipment line. Whatever you require, from 2 tons up, a Westinghouse system will match your needs. Only Westinghouse offers so complete an air conditioning line.

Interested? Want to do some advance planning? Then send for the Westinghouse Planning Guides. Or better still, call your local Westinghouse Air Conditioning Contractor for a free estimate. He'll be glad to help you. He's listed in the Yellow Pages of your classified directory.

Westinghouse Electric Corporation
Air Conditioning Division
182 Damon Street
Hyde Park, Boston 36, Mass.

Send me the "Planning Guide for Industrial Air Conditioning".
 I want a free estimate of the cost of air conditioning my premises.

Name.....

Company.....

Address.....

City..... Zone..... State.....



...from production line

to "service line"...



Armco Steel Tubing moves your products fast!

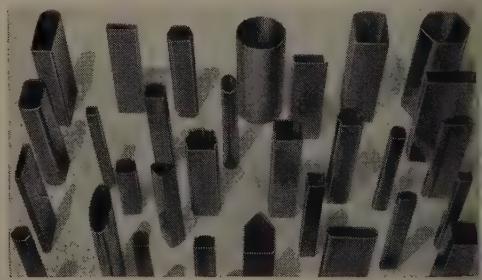
To cut your shop costs . . . to give your products that extra "sales" appeal, look into Armco Welded Steel Tubing.

Used in place of angles and other solid sections, Armco Tubing simplifies design and speeds production. And its smooth surface makes your products more modern and attractive — more salable.

Tubular parts mean your products are stronger and lighter in service, too. Loaded as a beam, Armco Welded Tubing has less than one-fifth the deflection with the same amount of steel. And as a column, it offers more than five times the load-carrying capacity with the same amount of steel.

Armco Welded Steel Tubing comes in a variety of made-to-order shapes in Hot-Rolled or Cold-Rolled

Steel; in ALUMINIZED (an aluminum-coated steel) and in ZINCGRIP (a specially zinc-coated steel). Tubing Specialists will help you select the right kind of tubing for your products. Write for further information.



These are some of the standard and special shapes of Armco Welded Steel Tubing. With either standard or special shapes you can reduce fabrication time and costs, give your products a more substantial look.

ARMCO STEEL CORPORATION

MIDDLETOWN, OHIO, WITH PLANTS AND SALES OFFICES FROM COAST TO COAST
THE ARMCO INTERNATIONAL CORPORATION, WORLD-WIDE





January 26, 1953

Faith in Freedom

Of all the state papers a President of the United States is called upon to write and deliver, the most difficult is the inaugural address. It must be brief, concise and simple. In it, the new Chief Executive is expected to set forth his creed of government.

Last Tuesday's inaugural address of President Eisenhower conformed closely to this formula. In his creed the ultimate objective is world peace and the means to that end is our "faith that the future shall belong to the free."

"This faith," he said, "is the abiding creed of our fathers. It is our faith in the deathless dignity of man, governed by eternal moral and natural laws. This faith defines our full view of life. It establishes beyond debate those gifts of the Creator that are man's inalienable rights and that make all men equal in His sight!"

This restatement of the creed of our founding fathers is particularly timely, because in the present state of world affairs it differs so sharply from the code of our enemies. The President defined this difference clearly when he said that "the enemies of this faith know no god but force, no devotion but its use." The conflict between free men and the enemy is "no pallid argument between slightly different philosophies." Instead "freedom is pitted against slavery; light against dark."

Upon this clear-cut definition of the major problem confronting us, the President outlines nine principles for guidance. They are strength to deter the aggressor, no appeasement, recognition of free people to place country ahead of comfort, pledge not to meddle in other nations' affairs, co-operation with other free peoples, encouragement of productivity and profitable trade, continuation within the United Nations framework of regional groupings of free peoples, rejection of any insinuation that any race is inferior and determination to make the United Nations an effective force rather than a mere symbol "in our quest of honorable peace."

President Eisenhower's repeated emphasis upon our faith in freedom is reminiscent of Lincoln's second inaugural address. It should inspire renewed confidence in our drive for lasting world peace.

EDITOR-IN-CHIEF

AWKWARD DILEMMA: By the time this issue reaches the desks of its readers, the dilemma in regard to the seating of Charles E. Wilson as secretary of defense probably will have been resolved one way or another. Most

persons hope a solution may be found whereby his appointment may be sent to the Senate and confirmed by that body without compromise of sound principles.

The Wilson case differs from many others

only in degree. It happens that General Motors has more government contracts than any other corporation and that Mr. Wilson's stock holdings are larger than in most cases of similar nature. Also the tax factor introduces a more than ordinary penalty. Now that these problems have been aired in public, it behooves the lawmakers to determine what, if anything can be done to deal more fairly with similar situations in the future.

* * *

CONTAINERS—AN INDEX: If somewhere in the nation there is a student majoring in economics who is looking for a good subject for his graduating thesis, he might well consider the significance of the substantial proportion of American steel output that goes into metal containers. With a little research, he might be able to prove that the fact that containers constitute the fourth largest outlet for steel is a sort of a rough index of the standard of our living.

In a good year more than 6 million net tons of steel (p. 48) go into containers—cans, caps, barrels, drums, pails, cylinders and other metal cooperage. One executive, optimistic about the short-term prospect, is confident that "in 1953 there will probably be more things in more kinds of metal containers than ever before in history." This reflects a high degree of development of mass distribution of food, fuel and other goods.

* * *

MATURE FOR ITS YEARS: Persons who attended the Plant Maintenance Show and Conference in Cleveland last week (p. 39) witnessed an event that would be a credit to any organization with decades of experience behind it. Considering the gratifying attendance, the number of first-rate exhibitors and the interest displayed in exhibits and meetings, it is difficult to believe that this successful enterprise is only four years old.

That this combination show and forum has grown from infancy to near-maturity in such a brief period is highly significant. It reflects the rapidly changing aspects of maintenance problems arising from mounting labor costs and the accelerated mechanization of production operations. Plant maintenance not only is becoming

more complex and more scientific, but it is also more closely meshed with the engineering problems of plant production. One exhibitor at the show—highly pleased with its results—was heard to say that the exhibits go beyond plant maintenance. He suggests that a more appropriate name would be "Plant Engineering and Maintenance Show."

* * *

JAPAN'S EXPORT TREND: Figures from a Japanese source reveal a rather surprising shift in the character of Nippon's exports during the prewar and postwar periods. In 1930 (p. 47), long before World War II, Japan's exports of iron, steel and machinery were only 3 per cent of her total exports of \$726 million. In 1950, iron, steel and machinery accounted for 17.7 per cent of her total exports of \$820 million and in 1951 they accounted for 25.6 per cent of a total of \$1409 million.

The percentages for the fifties are influenced by the Korean situation, but there remains the question of what Japan's export pattern will be like if and when her natural market on the Asiatic mainland is restored to her. Sometimes we think of the iron curtain as a political nuisance. Its greater curse is its ban on natural market relationships.

* * *

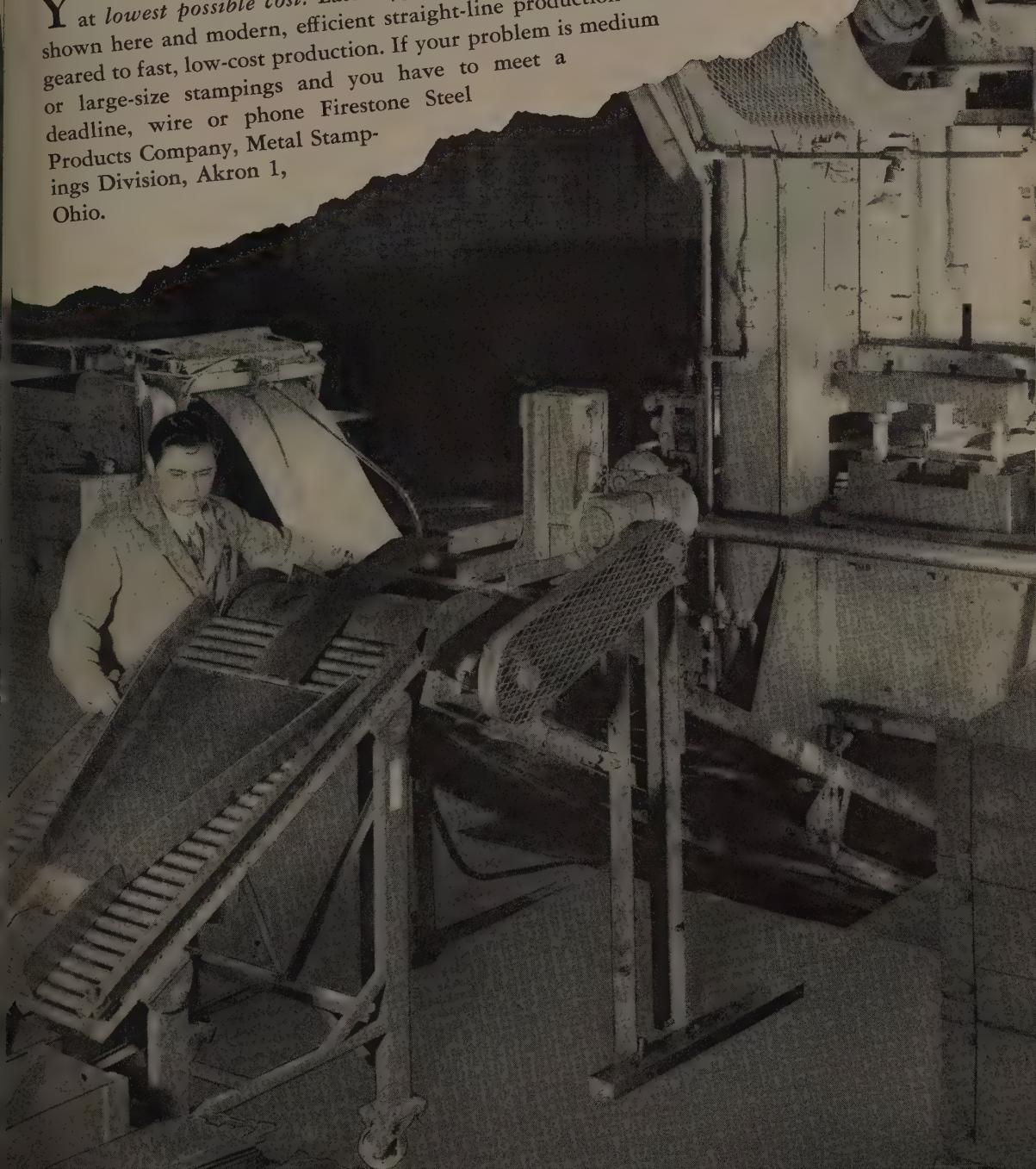
33rd, 34th or 49th? In last week's editorial it was stated that on Jan. 20 General Eisenhower would become the "33rd" President of the United States. In reporting the inaugural ceremonies some newspaper writers and radio and television commentators called him the "33rd" President but even more referred to him as the "34th."

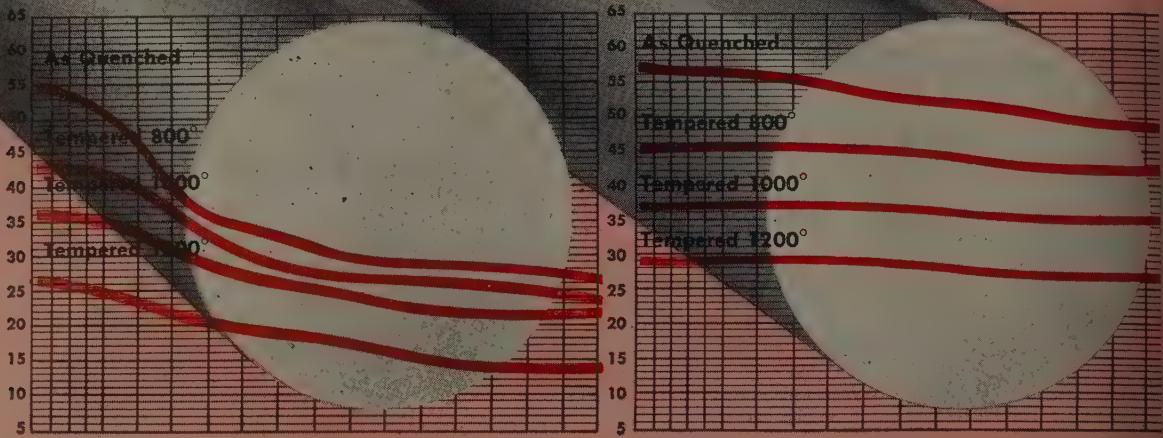
Of course the confusion arises from difference of opinion as to whether Grover Cleveland should be counted as the 22nd President or as the 22nd and 24th. Those who count him twice do so for the sole reason that his terms were not consecutive. To those who count him once, this is a thin argument. If we count Cleveland twice, why not count Franklin Roosevelt four times and the two-term Presidents twice? On that basis, Dwight Eisenhower would be our 49th President.

We'll stick to 33. Any way you figure it, General Eisenhower is the 33rd person to become President.

NEW AUTOMATIC MACHINES Firestone STEEL PRODUCTS CO. ASSURE ON-SCHEDULE DELIVERY OF YOUR DEFENSE SUB-CONTRACTS

You can always count on Firestone to deliver your metal stampings *on time* and *at lowest possible cost*. Latest-type high-speed automatic presses like the one shown here and modern, efficient straight-line production facilities are geared to fast, low-cost production. If your problem is medium or large-size stampings and you have to meet a deadline, wire or phone Firestone Steel Products Company, Metal Stampings Division, Akron 1, Ohio.





Same Alloy...but What a Difference!

Graphic Reason for Using Ryerson Certified Alloy Steel

Here are two bars of alloy steel recently purchased by a metalworking company. Both are the same type of alloy—AISI TS 4140 annealed. And both are high quality steels with chemistry meeting all the requirements of the specification.

But look at the difference revealed by hardenability tests!

The tempered-at-800° curves are typical. For the bar at left this curve starts at 44 Rockwell C and ends at 24. For the bar at right the same curve starts at 45—ends at 42. And the differences in hardenability naturally reflect equally marked differences in the mechanical properties that can be obtained from each bar.

Yet remember both bars are the same alloy and therefore are often expected to react in the same way. Their differences are

only the normal variations that occur between different heats within the same specification.

That's why it is so important for you to specify and buy Ryerson Certified Alloys. Every heat of as-rolled and annealed alloy steel from Ryerson has been tested for hardenability in our own laboratory. When you receive a shipment of Ryerson alloys you also receive a Ryerson Alloy Certificate which shows exactly how *your particular heat of steel* responded to those tests. And the Certificate interprets the test results for you in terms of mechanical properties.

Thus you know the actual—not just the theoretical—hardenability of your alloy steel from Ryerson. And you know exactly how to heat treat that steel to obtain the desired properties. So why guess at hardenability? Use Certified Ryerson Alloys and be sure.



PRINCIPAL PRODUCTS: CARBON, ALLOY & STAINLESS STEELS—BARS; STRUCTURALS, PLATES, SHEETS, TUBING, MACHINERY & TOOLS, ETC.

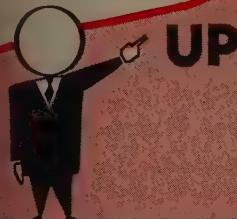
RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

1953 SELLING PRICES: Cuts Coming if Hard Sell Fails

35.1%

EXPECT PRICES TO GO



3.1% expect over 10% increase
16.3% expect 5-10% increase
15.7% expect less than 5% increase

47%

EXPECT PRICES
TO REMAIN THE

SAME



17.9%

EXPECT PRICES TO GO

DOWN

2.2% expect over 10% decrease
7.7% expect 5-10% decrease
8.0% expect less than 5% decrease

A check of 1152 businessmen reveals that they're giving increased attention to prices but that 82 per cent still expect them to hold or rise slightly in 1953

LING will be metalworking's job in 1953, but price-cutting won't be widespread unless the task is unexpectedly difficult.

STEEL's survey on the matter shows that less than 18 per cent of metalworking executives said expect price drops on their products in 1953. Significantly, only 50 per cent see no change.

The Argument—If they have to price at all this year, most men hope they can get by with holding the price line, despite rising costs. Prospects are that we'll be subjected to widespread labor demands this year which will continue to push up the sense of manufacture. That will more than offset any decrease in cost of materials. The Bureau of Labor Statistics' materials price (the wholesale index) has been dropping steadily since March, 1951, and now stands at 110 per cent of the 1947-49 average, only a little above pre-Korean levels. But the

BLS consumer index, which more readily reflects shifts in labor rates, is now more than 190 per cent of the 1935-1939 average. The pre-Korean average was less than 170. The problem that rising wages bring to the price structure is revealed in the castings industry which has just had to boost prices (see p. 38).

Practically all businessmen expect the old law of supply and demand, not the laws of OPS, to determine prices this year. Even with OPS still in effect, 70.7 per cent of the people surveyed say they currently are selling some of their products below ceiling. The effect of artificial curbs on prices will be even less when OPS expires.

Wait and See—Price barometers and market conditions will be watched with unusual care in coming months. "Let's put it this way," says William T. Mercier, secretary and chief engineer, Forged Tap Co., Pittsburgh. "We are going to watch the market and do whatever is necessary to avoid

jeopardizing our own position."

Price cuts are coming spottily but more frequently now. Rapids-Standard Co., Grand Rapids, Mich., cut prices on its gravity conveyor 6 per cent. Lead and zinc quotations have been slipping, fell another half cent a pound last week. Polymer Corp., Reading, Pa., cut prices on its nylon rod up to 40 per cent. Average 1953 auto prices are down a shade from 1952. Hard-pressed dealers are shaving them still more by boosting trade-in valuations (see p. 52).

Where To Look—When significant price-cutting trends do come, they will probably first show up in consumer durables. The consumer durable goods people then put the pressure on suppliers, and the price-cutting trend could gain.

But there's no momentum that way now. Business looks good, and widespread price paring is rare in such times. Personal income after taxes is now at new peak of \$242 billion yearly. Net personal savings are at an annual rate of \$21 billion, not a record but still double what they were in the excellent year, 1948. In short, people have the money to buy, and there are more people to do the buying—158.1 mil-

lion now compared with 146.6 million in 1948. And contributing even more to industry's reluctance to cut prices is the profit situation. Corporate profits after taxes in 1952 were about \$17.2 billion, compared with \$20.7 billion in 1948.

When To Look—Industry will promote the "hard sell" in 1953, but price-cutting will be minimized as a tool for increased sales. First

Founders Appraise Price-Hikes

OPS pass-through gives relief to founders, beset by rising materials, labor costs. Industry men now fear buyer resistance and cost increases yet to come

A TROUBLED INDUSTRY is relieved by over-all increases in ceiling prices, but time will tell if the pass-through is sufficient in view of continually-rising costs.

Malleable, gray iron and steel founders, confronted by spiraling material and labor expenses, received pass-throughs of from 5 to 9 per cent within the past six weeks. For the most part the increased cost is meeting slight opposition from buyers, but some foundry owners won't know until February whether the pass-through will completely succeed in passing through.

Satisfaction—Gray iron founders report general approval of a pass-through of 9 per cent received on Jan. 2, 1953. They add that extra cost of pig iron can be passed along, bringing the total increase to about 9.6 per cent. Donald Workman, executive vice president, Gray Iron Founders Society, says little resistance is being encountered to the price rise.

The gray iron founders' plight resulted largely from greater expense of supplies, notably manganese and sand, and costlier freight rates. Industry members are confident that the pass-through will fill the bulk of increased costs, although the full effect of the increase will not be felt for several weeks.

Accelerating Expenses—Malleable foundries blame increased cost of labor and materials for the necessity of a 6.2 per cent pass-through received on Dec. 19, 1952. Reaction is favorable to the price boost on the part of founders who hope raw materials costs stop ris-

ing. "The pass-through seems reasonably adequate and acceptable," remarks Lowell Ryan, managing director of Malleable Founders Society.

Steel founders are dubious of the value of a 5 per cent increase in ceiling prices received Jan. 2, 1953. They doubt that the price hikes will be sufficient after increased labor costs add to expenses for raw materials. The constantly rising price of labor affects costs all along the production line, causing headaches which a 5 per cent pass-through may not cure. Rising freight costs will complicate steel founders' problems and give them even more headaches.

New Castings Pass-Through

A directive of the Office of Stabilization promises additional relief for manufacturers of castings. SR 4 to CPR 60, effective Jan. 2, allows an increase of 3½ per cent in ceiling prices on high alloy castings.

Amendment 7 to GOR 35 effective Jan. 26, allows pass-through of increased costs of steel, pig iron, copper and aluminum to customers who get materials from sources other than mill suppliers and warehouses, and who were not entitled to relief under original regulations.

Outline Management's Job

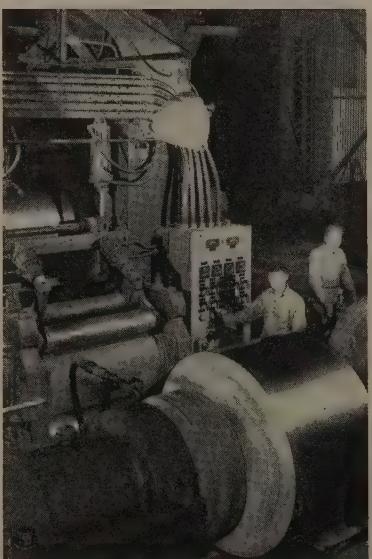
"Management's first job is to run a profitable enterprise. This is dependent on many things, including sound human relations which are important." So said Gwynn Price, president of Westinghouse Electric Corp., Pittsburgh, after the 337th meeting of the National Industrial Conference Board in New York.

The speaker outlined new responsibilities of management beyond supervising manufacturing, finance and sales. Operations now include research, public relations, safety, training, planning and control. The problems face industry—government intervention, high taxes, national labor unions, fluctuations between wartime and peace and multiplied competition. The result has been to make business organization far more complex.

Other speakers emphasized the importance of getting personnel policies in black and white, with frequent revision of those policies. They suggested four goals of industry: Identification with public service; economic welfare of the company; recognition of individual dignity in occupations; and preservation of free enterprise and representative government.

Kaiser Sets New Marks

Kaiser Steel Corp.'s Fontana, Calif., works set production records in 1952 by boosting steel ingot output to 1,384,060 net tons, 5 per cent more than in 1951 and by increasing output of pig iron by more than 6 per cent to 977,267 tons. An additional record was established in production of finished steel, with



HELPS KAISER SET RECORDS
... temper mill works strip steel coils

reached 964,302 tons for the year. A \$5 million expansion program in operation has included a new open hearth furnace which rated ingot capacity to 50,000 tons annually, an increase of 25 per cent. Meanwhile, production of iron ore in 1952 at Kaiser's Mountain, Calif., mines rose 648,941 tons, nearly 25 per cent more than in 1951.

Kearney & Trecker Revamps

30 per cent productive capacity increase with a decrease of 15 per cent in floor space—that's a year achievement of Kearney & Trecker Corp.'s Walker-Turner division, Plainfield, N. J. A complete revamping of facilities added about 30,000 square feet to one plant while the company moved out of the building where it began production of light machine tools in 1930.

Kearney & Trecker, which relies on suppliers for a great number of components, has boosted its annual sales to the \$6 million level. The 40 per cent of current output is to defense support.

Final Investigation Dropped

Jury authorization issued in January, 1952, for an investigation of the electronics industry was asked by former Attorney General James P. McGranery before he left office. Mr. McGranery said evidence indicates that "whatever gains may exist in the industry should more properly be the subject of civil litigation than of criminal prosecution."

He said that the investigation would continue, but not under criminal process.

Group Management

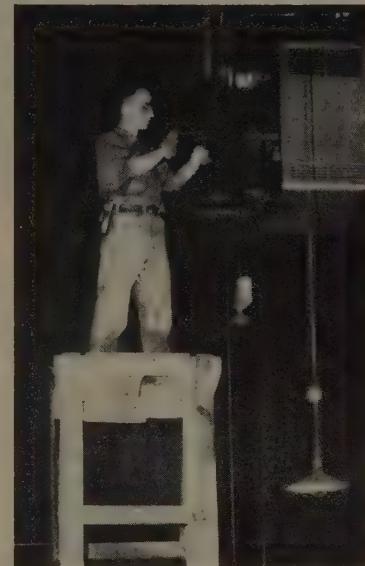
Junior executives are bringing their everyday contact with the problems of production, engineering and sales to bear on company policy under a group management at the Alloy Metal Wire Co., Prospect Park, Pa.

Members of the junior board of executives are chosen from shopmen, plant superintendents, engineers, sales engineers, etc., giving recommendations which are considered by the senior board directors of the firm.

Modern Plant Upkeep: Aid to Profits

The old-man-with-a-broom maintenance man is being replaced by an efficient, mechanized operation. It's designed to minimize down time because of plant housekeeping

LAST YEAR, businessmen invested \$26.9 billion in new plant and equipment. This year, they'll spend



PLANT MAINTENANCE MODERNIZES . . . accounts for \$17 billion yearly

about \$17 billion for upkeep on that and older facilities.

In fact, bills for housekeeping in industry may run from "8 to 15 per cent of each sales dollar," says H. E. Bliss, assistant controller, Lukens Steel Co. A large part of that bill will be to keep the production machines operating. The average machinery investment per worker was \$8000 in 1950 compared with \$2000 per worker in 1900. Current trends toward automation will continue to heighten the maintenance worker's importance to the production line.

Before the Breakdown — That's why management is becoming more interested each year in "controlled" maintenance and "productive" maintenance, which means figuring on what maintenance will be needed and doing it before production lines break down. It means the tools of maintenance must become more efficient, too.

At the state fair of plant maintenance, the Plant Maintenance Show

in Cleveland, some 7000 diversified products were displayed last week for an estimated 15,000 visitors. Among the exhibitors were Tennessee Eastman Co., New York, which showed a transparent plastic tubing for compressed air message transmitters. The transparency permits quick inspection by a maintenance man when an obstruction occurs. Oster Mfg. Co., Cleveland, introduced a portable pipe threading machine which can thread all sizes of pipe from a quarter inch to 2 inches in diameter.

Cement Cut-up — Kollman Mfg. Co., Erie, Pa., showed a portable unit for opening clogged industrial or sanitary drains. Velocity Power Tool Co., Pittsburgh, introduced a pistol-type acetylene torch which is ignited and shut off by trigger action. Clipper Mfg. Co., Kansas City, Mo., demonstrated a saw with diamond blade capable of sawing concrete for the repair of concrete floors and for making openings for machine bases.

J. R. Sautter, assistant works engineer at the Chambers works, E. I. du Pont de Nemours & Co. Inc., Deep Water, N. J., said in one of the 16 formal conferences which ran concurrently with the show, "du Pont is saving \$146,100 each year on just one (maintenance) item, in a single plant." By making a study of valve maintenance, the number of valves used was reduced from 42,650 to 22,700, with a yearly reduction from \$304,500 to \$158,400. The study cost only \$3000, Mr. Sautter explained.

Growth of the maintenance show gives some evidence of the increasing interest in the field. Three years ago the first maintenance show covered less than 10,000 square feet—this year the show covered 100,000 square feet in Cleveland's Public Auditorium.

Controls Repeal Demanded

"Stockholders of Joy Mfg. Co. should demand that the wage and price control program be abolished," the Pittsburgh company's

president, J. D. A. Morrow, declares. He explains that unequal application of government price fixing has penalized his company's earnings performance since early in 1951.

While wage rates and cost of supplies have advanced since adoption of the government's price stabilization program, prices of Joy Mfg. Co. products and maintenance parts have remained frozen, except for small pass-throughs of the cost of certain metals and raw materials.

The company's net earnings for the final quarter last year were equal to \$1.27 a share, compared with earnings of \$1.45 a share one year earlier. Shipments totaled \$19,592,000, a drop from \$19,897,000 in the corresponding quarter of 1951. Certain alloy steel shortages hampered shipments.

DMPA Aids New Project

The Defense Materials Procurement Agency will underwrite development of an Oregon nickel deposit by two units of M. A. Hanna Co. Hanna Coal & Ore Corp. will develop the mine at its expense. Costs will be about \$4.3 million. DMPA will advance Hanna Nickel Smelting Co. \$24.8 million for a smelter which that company will operate at the project.

Hanna's subsidiaries will produce from 95 to 125 million pounds of nickel at the deposit, starting in 1954. DMPA will pay company expenses of about 79 cents a pound for the first five million pounds smelted and 60.5 cents a pound thereafter. The contract runs to June 30, 1962.

School for Management

An economics class for businessmen at Youngstown Sheet & Tube Co. has given diplomas to its first graduates—227 management employees. The class was made up of men ranging upwards from general foremen. Purpose is to teach workings of the American economic system.

The company hopes to send all supervisors to its Youngstown school, which was developed in cooperation with the University of Chicago.



NAILS APLENTY



Millions of nails fill hundreds of uses, but current demand trails production

FUTURE BATTLES will not be lost for want of a nail.

Supply exceeds demand, causing prices to wobble, although production of common wire nails is below capacity. In 1952, heavy nail production caught up with a peak postwar demand.

Common Wire Nails—Heaviest member of the nail family, in tonnage of production, is the common wire nail. Output in 1951 reached 16.8 million 100-pound kegs, but slumped to about 13 million kegs in 1952. Record production year was 1923 when 17,672,582 kegs went through die and heading equipment.

Production processes have changed little since the turn of the century, except for faster production and quicker die changes. Machines turn out upwards of 27,000 size 8d nails an hour. The wire nail industry is highly integrated, as five steel mills produce better than 80 per cent of total output. Some 300 independents have one or more nail-making machines. Leading size is the 8d, making up nearly 25 per cent of the total. Cement-coated nails comprise 14 per cent of production and galvanized

nails reach nearly 11 per cent.

Cut Nails—Oldest of the nail family is the cut nail, whose production has dwindled from 2 million kegs in 1886 to a present level of about 600,000 kegs annually. This output requires 30,000 tons of slit sheets and plate, including tonnage for cut spikes.

Only three companies are now making cut nails, all by modern production processes. These are Alan Wood Steel Co., Conshohocken, Pa.; Wheeling Steel Co., Wheeling, W. Va., and Tremont Nail Co., Wareham, Mass., producers since 1819. Nailmaking machinery for cutting and heading nails from slit iron sheets came into use at Tremont in 1822. The new machinery turned out 10,000 nails in less time than 250 could be hand-hammered. Fairly steady market remains for cut nails, used in flooring and other wood connections where a blunt point reduces splintering.

Nail Specialties—Although there are several hundred special nails, less than a half dozen producers confine output to this group. Considerable amounts of nonferrous metals are used in nail specialties.

Employees Buy Company

Cleveland Pneumatic Tool
s to workers in unique
al involving \$11.8 million

COMING TOMORROW, Jan. 26, employees of Cleveland Pneumatic Tool Co., Cleveland, will own 100 per cent of their company as arrangements for the sale are completed. Sixty Trust of Boston, stockholders, and company officials involved in the plan, involving \$11.8 million, over several months. The stock will be divided between profit sharing trusts representing salaried employees, with the holding company controlling 10 per cent. That was stipulated by the Trust to assure continuity of the present management.

Off—The overtime pay group, represented by the Cleveland Pneumatic Tool Co. Profit Sharing Trust, scheduled to pay off the balance of indebtedness in seven years. Salaried workers, represented by the Street Trust, will take 14 years.

Employees approved the unanimous action of the committees they elected to represent them. Down payment was \$1,000, paid from funds now in trust.

J. S. Mullin, president, says the plan is unique because it is the first time employee owners have been tried by a major corporation. Cleveland Pneumatic Tool, which makes shock-absorbing air-landing gears, employs 2,700 workers. Mr. Mullin estimates that sales and earnings of the company will be good enough over the next four years to meet the payments.

At present, the company has an order backlog of \$90 million. This means that employees will be increasing their profit sharing funds in their own company.

Improved Relations—Comments all over the nation have been enthusiastic. Mr. Mullin says the "is a real attempt not merely lip service to the theory that workers are entitled to share in the profits that he does but to put that theory into practice."

Each of the past three years, workers have shared through profit sharing trust to the tune of 10 per cent of base earnings.



All figures estimated by STEEL for dollar sales of the commercial drop forging industry, excluding captive shops and heavy smith forging shops

No Drop in Drop Forging Dollar Sales

THE STEEL STRIKE left its stamp on drop forging business, making the steel shortage its number one headache in 1952. In fact, commercial drop forgers' delivery dates are just getting back to where they were seven months ago.

Despite the steel strike, defense stretch-outs and local labor troubles, commercial drop forgers' dollar sales rounded off at about \$600 million for last year (see the chart). That's up \$35 million from 1951. Tonnage-wise the industry lost some ground but hardly enough to be indicative of anything. In 1951, commercial drop forgers put the squeeze on 1,174,000 tons of forgings; in 1952, the total was about 1,160,000 tons.

Little Help—Defense-rated business was some help to forgers' over-all sales pictures but the majority of the 125 commercial jobbing shops didn't have over 45 per cent of their volume in direct defense work. Counting defense-related orders, forgers on the average had 50 to 60 per cent in defense work last year.

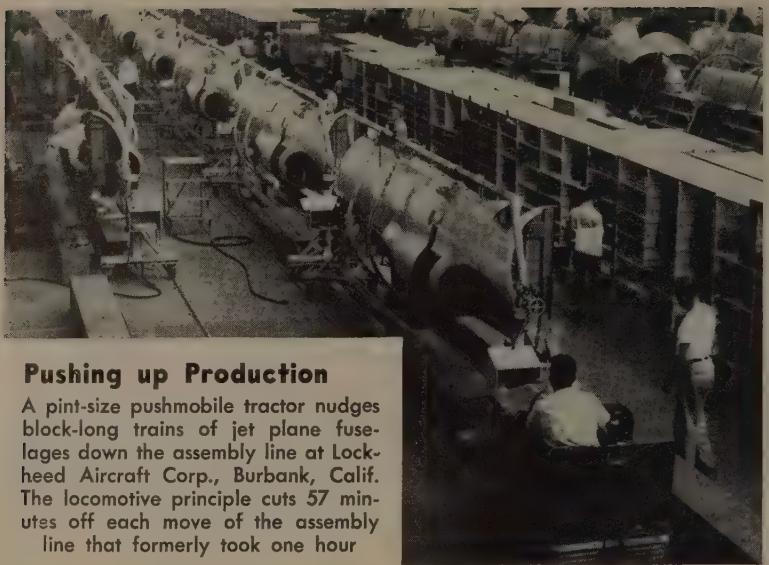
There's still a lot of defense work "stretched out" on the order pad. A Pennsylvania drop forger's defense work history goes like this: Currently, defense contracts account for 10 per cent of the shop's total; high point in defense work came early in 1952 when it was 50 per cent, and unconfirmed orders

on hand can eventually boost the defense load to at least 25 per cent of total volume again.

Behind Deliveries—Delivery dates currently are about 7 months for large forgings, 4 to 5 months for medium and smaller sizes and 5 months for alloy forgings, longer perhaps for larger sizes. At first glance those deliveries seem to be little improvement over the situation a year ago. But, at that time commercial shops were discouraging new orders, accepting only re-orders. Now, new orders can get on the books, too.

Civilian business is confidently expected to take up any slack in defense ordering in 1953—if there's no large coal, steel or serious local labor strike. Peacetime buyers, like the automotive industry, agricultural equipment people, the aircraft industry and railroads, have been getting pushed off for over a year. One Cleveland drop forger said: "That doesn't mean we think the traffic will bear any across-the-board price increases. We look for a return to a buyers' market, and good business in 1953."

It won't be long, forgers believe, when they'll have to sit down with customers and work out a give-and-take deal on delivery and price. In the meantime, outlook for steel is slightly brighter for second quarter and warehouse stocks of forging stock are strengthening.



Pushing up Production

A pint-size pushmobile tractor nudges block-long trains of jet plane fuselages down the assembly line at Lockheed Aircraft Corp., Burbank, Calif. The locomotive principle cuts 57 minutes off each move of the assembly line that formerly took one hour

Defense Expansion Goals: Only Ten Are Unfilled

ROUNDING OUT its mobilization program, the Defense Production Administration says that ten defense expansion goals are still open to the metalworking industry.

You may obtain permission for rapid tax amortization on new or expanded facilities to produce: Batteries, "AA" type, dry cell; diesel locomotives; freight cars; gas utility pipelines; metal cans (tin conservation); scientific instruments; Great Lakes ore carriers; ocean going ore carriers; ocean going tankers and Inland Waterway vessels.

Where To Ask—Requests for information on these goals should be sent to the National Production Authority, New GAO Building, Washington 25. Applicants for certificates of necessity for tax amortization should bear in mind the government's policy on plant dispersion, says Ralph S. Trigg, DPA's acting administrator.

Since inception of the mobilization base program, DPA has filled 82 separate expansion goals. Another 101 goals are still incomplete, but pending and prospective applications for tax amortization are expected to fill these goals.

Enough Help? — "With a substantial portion of the established goals taken care of," Mr. Trigg asserts, "DPA is currently making an intensive study of all goals, as well as projected goals. This study is to determine the relative import-

ance of established goals, to identify and remedy remaining bottlenecks and to determine if tax amortization and other current government aid are providing enough incentive for expansion of the required defense facilities."

Radiation Instruments Growing

Radiation instruments have grown from practically nothing into a \$20-million industry in only six years, a survey by the Atomic Energy Commission shows. The industry was virtually nonexistent in 1946, and last year it employed more than 2400 persons.

Outside the AEC program radiation instruments are finding an expanding market. At present, military agencies provide about 50 per cent of the total market; the AEC and its principal contractors about 30 per cent, and the remaining 20 per cent is accounted for by private industry, universities, hospitals and research institutes, civil defense and export.

Seven companies with probable

business volume in excess of \$100 million each in 1952 account for about 50 per cent of the industry's activity.

Report Hits Discrimination

Observance of the non-discrimination clause in government contracts has been conspicuously absent—a neglect for which government procurement agencies, employers and labor unions all are blamed. That's the conclusion of the President's racial discrimination committee, of which Dwight R. D. Palmer, chairman, Gera Cable Corp., served as chairman.

Drastic remedies for this condition are recommended to the Eisenhower administration, including court injunctions in case of flagrant violations of the anti-discrimination clauses, and blacklisting of guilty contractors from doing further business with the government. The Labor Department said the committee, can be designated as the agency to take action on complaints of discriminatory practices.

Because of the committee's criticism, General Services Administration has put into operation a procedure to make effective the nondiscrimination clause in GSA contracts for supplies and services. At the same time, GSA requires the clause to be written into applicable contracts.

Grinding Wheel Supply Good

Users of diamond grinding wheels now have a 60-day inventory, but supply and demand of such wheels are in delicate balance, manufacturers of the equipment told *ENR*. Intensification of the defense program could throw that balance off, they agreed.

At present, consumption of diamond bort is exceeding imports and inventories of the raw material are receding. But if conservation and salvage operations

SELECTED DEFENSE CONTRACTS IN EXCESS OF \$100,000

PRODUCT

Lathes, Engine	Lehmann Machine Co., St. Louis
Mortar Shells, 60 mm.	Line Material Co. Division, McGraw Electric Co., Mil
Howitzer Parts, M-1	R. H. Boulingay Inc., Charlotte, N. C.
Aircraft Engine Parts	United Aircraft Corp., E. Hartford, Conn.
Aircraft Parts	General Electric Co., Schenectady, N. Y.
Automotive Parts	Hercules Motors Corp., Canton, O.
Engines for Fire Equipment	General Detroit Corp., Detroit
Pumps for Ships	Worthington Corp., Harrison, N. J.
Air Compressors	De Laval Steam Turbine Co., Trenton, N. J.
	Ingersoll-Rand Co., New York

acted more rigidly this year, many of grinding wheels will be late. Such practices helped in 1952. For that reason, members of the industry urged that NPA Order 103 be retained and enforced stringently.

The diamond grinding wheel manufacturing industry used 9 million carats of diamonds in 1952.

Men Sets Records

Production records were set at the Timken Roller Bearing Co., Canton, Ohio, in November, 1952, only to be broken in the following month. Vice President A. M. Timken announces that 242,000 fine-grade bearings were produced for a working day in November and 240,000 for each day in December. Plant officials say a considerable backlog of orders exists and production will continue at a high level this year.

Write-off Total Climbs

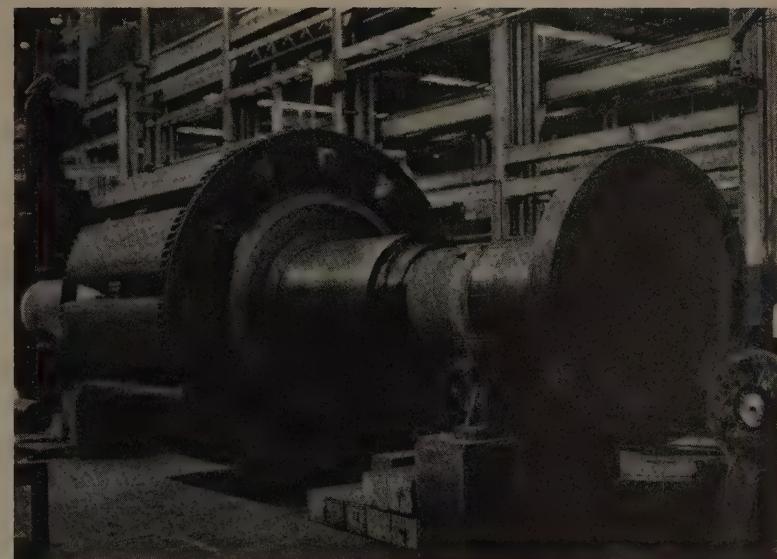
Defense Production Administration issued 266 certificates of necessity between Dec. 31, 1952, and Jan. 14, 1953, for new or expanded facilities amounting to over \$213.6 million, including 117 small business projects worth over \$97 million.

Three largest certificates are: The Machine Co. Inc., Los Angeles, \$65,250,000, 85 per cent allowed; T. H. Browning Steamship Co., Detroit, \$18 million, 65 per cent allowed; Southern Indiana Gas & Fuel Co., Vanderburgh and Warren counties, Ind., \$10,443,500, 45 per cent allowed.

The latest list brings the total of certificates approved for fast write-off to \$280, worth over \$24.3 billion.

Warehouses See Improvement

Copper and brass warehouses begin to supply are rapidly coming into balance with demand. Stock levels of almost every product are improving. Items of particular short supply, in order of scarcity: Copper wire, steel shafting, brass tube, brass and phosphor bronze products, dur in all shapes. Warehouse deliveries from suppliers for all three average 66 days. Sales led from fair in New England, South and West to good in the Midwest.



Big Rotor for a Big Motor for a Big Wind

This huge 122-ton rotor, being built by Westinghouse Electric Corp., will be inserted in an 83,000-horsepower motor to form one of the world's largest rotating machines. Coupled with three other motors in tandem, the combined unit is slated to develop 216,000 horsepower for the Air Force's supersonic, transonic wind tunnels at Tullahoma, Tenn. The 127-foot rotor weighs 244,000 pounds.

Edwin R. Motch Dies

Edwin R. Motch, 51, president, Motch & Merryweather Machinery Co., Cleveland, died Jan. 22.

CHECKLIST ON CONTROLS

Price Regulations

SCRAP—Amendment 12 of CPR 5, issued and effective Jan. 16, 1953, restates the definition of scrap broker and changes the basis of applying the \$1.50-a-gross-ton deduction from shipping point ceiling prices for scrap where the purchaser is required to perform certain operations in moving the scrap.

IMPORTED STEEL—Supplementary Regulation 2 of CPR 31, issued Jan. 16, 1953, and effective Jan. 21, establishes specific dollars-and-cents markups of \$15, \$20 and \$25 per ton for the different categories of imported steel commodities listed in CPR 31. It also sets percentage markups for warehousing imported steel which are in line with those already provided for domestic steel.

Controlled Materials Plan

CONSTRUCTION—Amendment 1 of Jan. 21, 1953, of Appendix A of Direction 8 to CMP Regulation 6 permits self-authorization of a larger quantity of controlled materials for use in public road and highway construction. Amendment was effective Jan. 21.

MACHINE TOOLS—Amendment 1 of Schedule 1 of CMP Regulation 5, effective Jan. 22, 1953, adds metalworking machines priced at less than \$1000 to the list of items for which MRO rat-

ings may not be used to obtain delivery. It is designed primarily to assist manufacturers of small machine tools in re-entering foreign markets which are being lost to European competitors as a result of operations of priority systems in the U. S.

Appointments in Washington

William L. Cressman, on loan from Armco Steel Corp., Middletown, Ohio, was appointed director of the Iron & Steel Division, National Production Authority. Mr. Cressman has been deputy director of the division since October, 1952. William J. Stephens, assistant general manager of sales of Bethlehem Steel Co., Bethlehem, Pa., is the new deputy director.

Donald S. Parris, in government service since 1935, was named acting director of the Electronics Division, National Production Authority. Mr. Parris has been the division's deputy director for two years.

William J. Hoff was appointed assistant to the director for post-attack production planning, Office of Defense Mobilization. Mr. Hoff has held a similar position in the Defense Production Administration since July, 1952.

James C. Starks, of Sandia Corp., Albuquerque, N. Mex., was named executive director of the Research & Development Board's Committee on Atomic Energy.

E. T. Brown, of the Townsend Co., New Brighton, Pa., was named chief of the Bolt, Nut & Solid Rivet Section, General Components Division, National Production Authority.

L. Parker Fairlamb was appointed director of the Office of Materials & Equipment of the Small Defense Plants Administration. Mr. Fairlamb has been acting director since April, 1952.

Windows of Washington

By E. C. KREUTZBERG Washington



NAVY SLASHES "BOILER PLATE" FROM CONTRACTS
... action could expedite industry's defense work

New Naval policy aims at speeding contract procedure. Statement of basic contract conditions would simplify dealings with government and cut "boiler-plate"

MILITARY CONTRACTORS will click their heels on learning that the Navy has found a way to eliminate complicated contracts. If the Navy succeeds, the other services might follow suit. Result would be to speed all armed services contract procedure.

New Navy policy calls for drafting a "basic agreement" with contractors. This agreement does not constitute a contract, explains Vice Admiral C. W. Fox, chief of naval material and administrator for the agreements. Instead, the agreement stipulates conditions which all contractors must fulfill in doing business with the Navy. Once the basic agreement has been executed, the only matters to be negotiated will be quantities, prices, specifications, delivery dates.

Cuts "Boiler-plate"—Such procedure eliminates the necessity of including in each contract all provisions required under the Armed Services Procurement Regulation, executive orders and statutes enacted by Congress. These conditions are covered by the basic agreement, thus making it unnec-

essary for the contractor to check many clauses in the "boiler-plate" pages.

The basic agreements are entered into with companies doing business with the Navy on a continuing basis. It is impracticable to arrange such agreements with occasional contractors. The first basic agreement was signed with the Hazeltine Electronics Corp., Little Neck, N. Y. Similar agreements are being negotiated with other Navy suppliers.

Metallurgy Slighted?...

If the National Science Foundation is advancing basic research in metallurgy, such contributions are omitted from the Foundation's annual report for fiscal 1952, newly released. A two-sentence reference mentions research in "high temperature physics, chemistry and metallurgy" in the field of "jet motors, rockets and guided missiles"—but no particulars are given.

Although the report dwells on the insufficiency of congressional appropriation to finance all needed

programs, scrutiny of 78 grants announced by the foundation for fiscal 1953 indicates that the interest is in encouraging research in astronomy, chemistry, earth sciences, biology, mathematics, engineering and physics. The 78 grants are evenly distributed over this list of categories.

Rousing Send-off ...

Charles Sawyer, widely regarded as the ablest secretary of commerce since Herbert Hoover, tendered a unique honor by the Business Advisory Council on his retirement from the government. At a farewell dinner, a plaque engraved with the signatures of 159 council members, and the words "in recognition of outstanding service to the Government and the Nation" and as a mark of members' "personal affection and esteem" was given Mr. Sawyer.

Before leaving, Mr. Sawyer appointed John D. Biggers chairman of the council. Mr. Biggers is president of Libbey-Owens-Ford Co., Toledo, O.

Coal Demand Forecasted...

Coal needs of electric utilities, coke ovens and steel mills in 1953 will outweigh declines in railroads and export requirements. The Defense Solid Fuels Administrator predicts this in its forecast of bituminous demand for this year. Demand will rise 10-million tons above 1952 to 476-million tons of bituminous. The administrator's forecast is 7-million tons more than the demand predicted by Appalachian Coals Inc., marketers.

Orders for NPA Material...

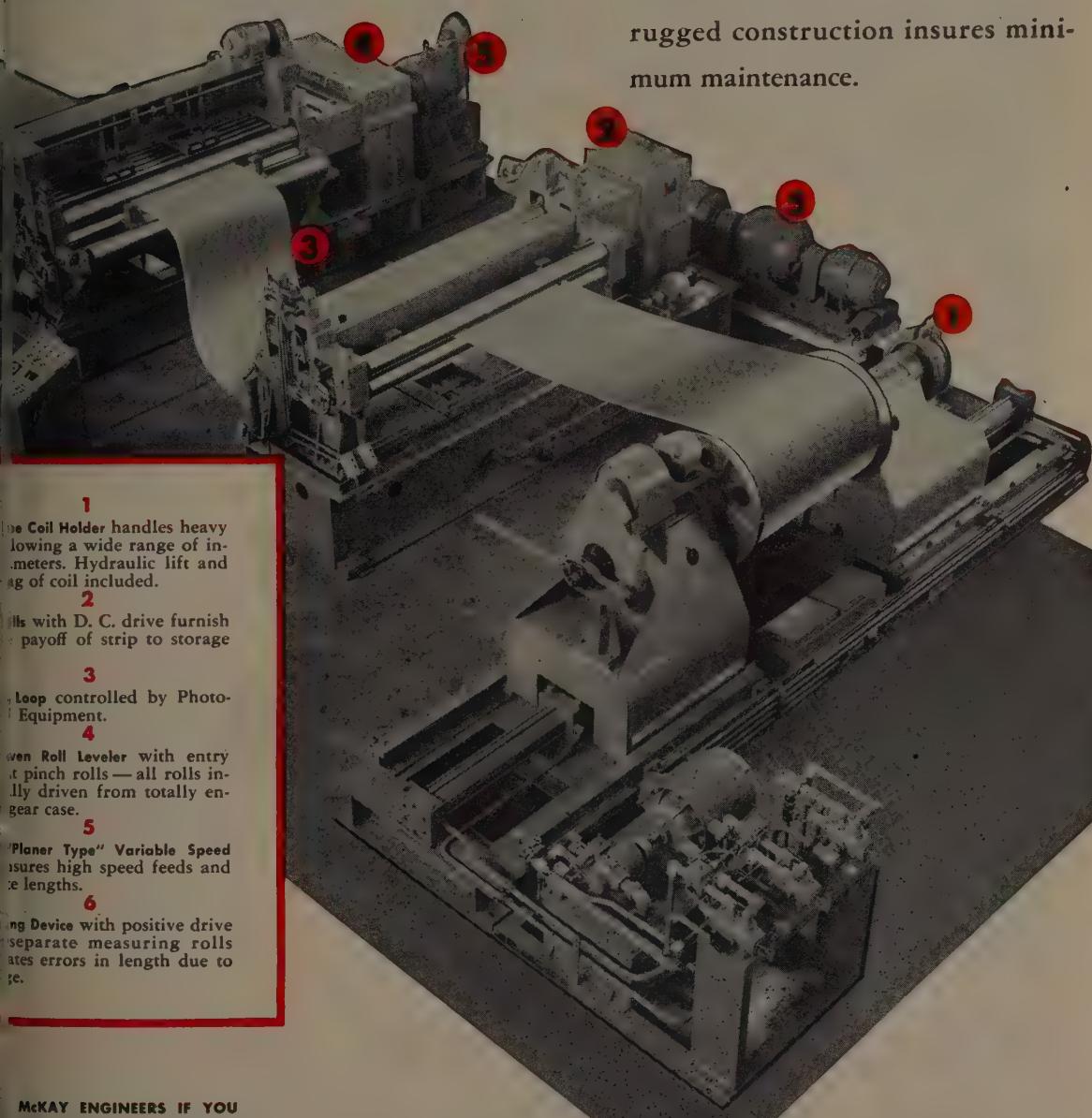
Sales copies of orders and printed material issued by the National Production Authority longer are available in quantities at NPA headquarters in the New GAO building, Washington, but are now obtainable in Room 6816, Commerce building. Free copies of orders and related material will continue to be available at the Business Advisory Service reception desk, opposite Room 6816, New GAO building.

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-santly driven from totally en-
-closed gear case.

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coil.

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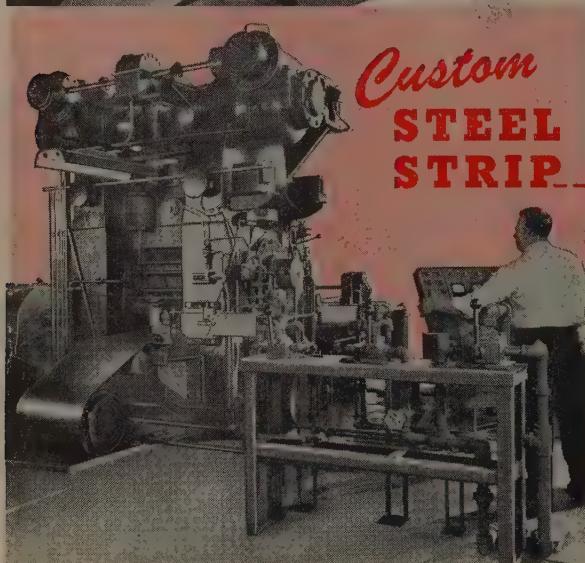
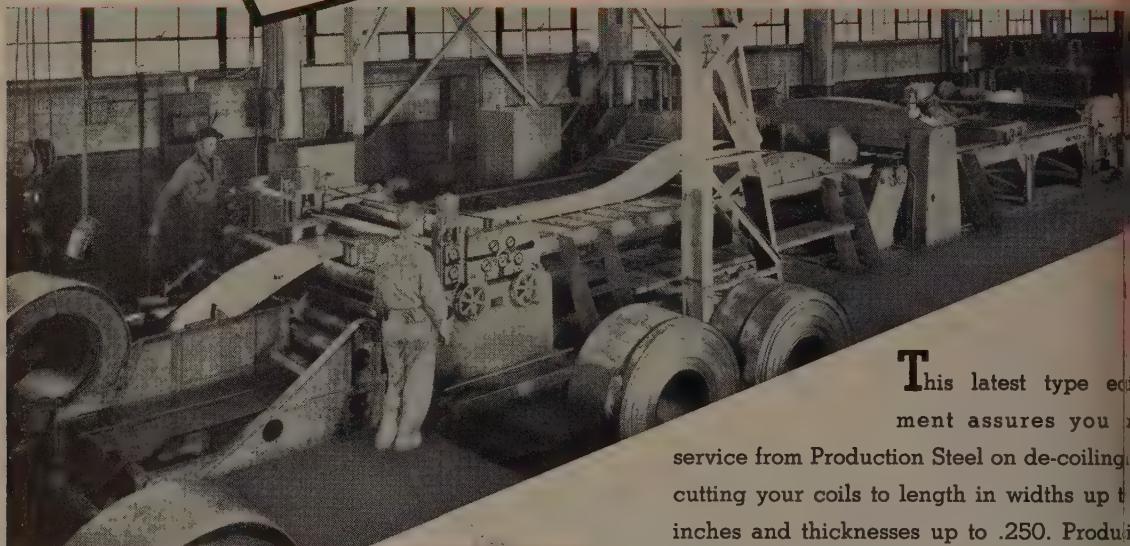
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Phone: 2-9097
Glenn Christman, Sales Representative

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H. Clive Morrison, Sales Representative

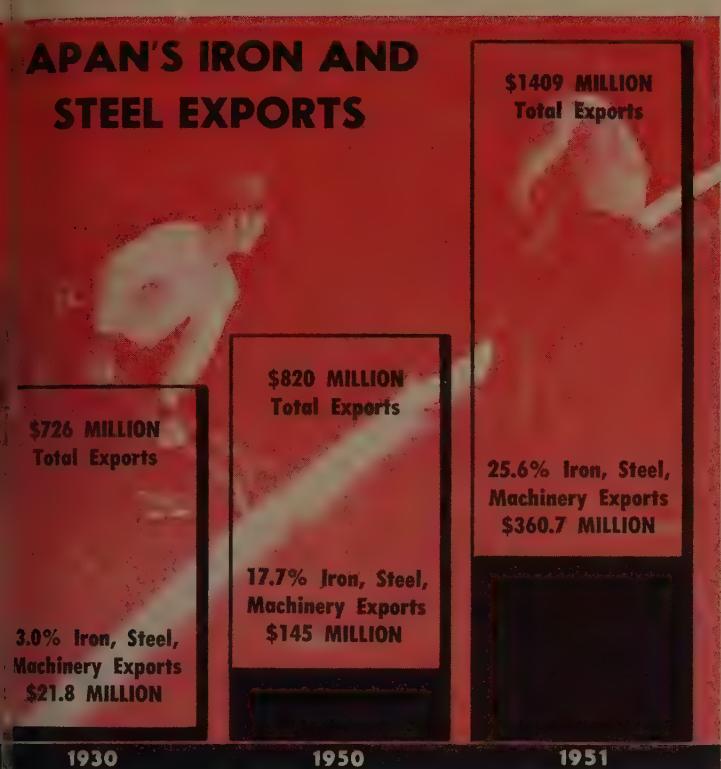
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APAN'S IRON AND STEEL EXPORTS



Japan: Metal Exports Take Bigger Bite

Shipments of iron and steel products accounted for one-fourth the total Japanese exports in 1951. The world market situation helps push the percentage upward

MENT of 27,500 tons of steel products in 1947 to the U.S. reduced Japanese metal exports after World War II. Those and other metalworking exports continued to bigger shares of total Japanese exports up to 1951, the latest on which figures are available, in iron, steel and machinery exports accounted for one out of every four export sales dollars (see chart).

hat post-World War II march metalworking exports in Japan based on: Relatively lower exports of iron and steel from Western Europe has turned more demand to Japan; a continuing lag supply below demand in world markets and the preference of Japanese iron and steel makers for export sales to get immediate cash for their product, not always possible in domestic sales.

Japan Explained—These and other subjects are discussed in a

new booklet *Japan's Iron & Steel Industry*, 1952, published by the Tokyo Liaison & Translation Service, which is aimed at "describing the characteristics and trends of the Japanese iron and steel industry" to foreigners. The booklet also touches on related industries, such as raw materials suppliers and end product manufacturers. There's an appendix of sizes of ordinary finished steel products by Japanese makers, too.

Japan's Iron & Steel Industry is available for \$3.00 from the Tokyo liaison & Translation Service, 7, 2-Chome, Yurakucho, Chiyodaku, Tokyo, Japan.

Record U.S. Exports in '53?

"If we can make deliveries, and if more American firms sell overseas, exports in 1953 should hit an all-time high because the need and demand is there."

So says Ralph M. Kovel, presi-

dent, Case International Co., Cleveland, one of Ohio's largest general import-export firms.

"The need for American-made goods is as great as ever in Europe and South America. But, because of slow delivery on many items, we are losing out to some foreign manufacturers. This is doubly hard to take because we are losing out to inferior merchandise. Other than specific items, America as a whole is losing business because its firms are not conscious of the tremendous world markets. There are many case histories on record of U. S. companies which have skyrocketed sales by allocating a portion of their output to the markets abroad."

Mr. Kovel concluded that imports would also be high in 1953 because "in many countries, governments are allocating scarce materials for use in exported goods only. The quality of foreign-made products is in most instances high; in Japan, the quality exceeds pre-war level.

"U. S. industry has now had a chance to test imported machine tools and other equipment and, in the light of their performance, is now ready for reorders."

Loans To Bolster Metals Supply

Loans by the Export-Import Bank of Washington for development of sources of strategic materials accounted for more than half of its loan commitments made in 1952, \$314.2 million out of \$596.6 million. Herbert E. Gaston, chairman of the bank, says there are a substantial number of additional loans for mining and transportation, power plants and port facilities in Africa under consideration.

Mr. Gaston's statement follows closely the announcement by the E&I Bank that it has given the Republic of Portugal a \$17-million credit to be used in construction of a railway from the Rhodesias to the port of Laurencio Marques in Mozambique.

Significance of that: The railway will provide an alternate and an added means of getting copper, cobalt and chrome out of North and South Rhodesia. Most of these materials go to the United States and other friendly nations.



Filled to the Brim . . .

More things may go in more metal containers during 1953 than in any other year

MORE STEEL will go into containers this year than last and possibly more than in any other year on record.

That view is predicated on the likelihood of continued strong demand for containers and—something not true in 1952—sufficient steel to meet the demand.

Demand Is Good—Steel container applications have been steadily broadening. With an adequate supply of steel, the industry believes even a leveling off or a moderate recession in business conditions generally this year is not likely to preclude some gain in the container industry—if for no other reason than that an alert technical and commercial research has generated a great momentum.

Uptrend over the past five years in steel shipments to the container

industry, fourth largest consumer of steel in this country, is reflected in American Iron & Steel Institute figures, shown in the accompanying table.

Steel Strike Effects—Actually, figures for the first nine months of 1952 show a slight gain over the corresponding period of 1951—2,985,077 tons, against 2,931,776 tons. However, some trade leaders believe that when final returns are in it may be found that overall consumption of steel for can-making was off, as major effects of the steel strike did not show up until the final quarter.

Of the 2,985,077 tons of steel consumed in the manufacture of cans during the first nine months, 2,004,010 tons went into food cans, against 2,007,596 tons in the same period of 1951, and

981,067 tons into non-food cans, against 924,180 tons.

Trends—While leading can makers look for a normal increase in sales this year, some trends are noteworthy, such as use of metal cans in the frozen food industry to replace cardboard and tons and fibre body containers. When this trend first became pronounced in 1951, 6-million pounds of frozen foods were packaged. Demand spurted rapidly last year, and further gains are expected this year.

Demand for cans for automotive accessories and supplies has increased to a point where now around 250,000,000 cans are being produced annually for about 30 different products. Valve type metal containers for various products dispersed by pressure methods to the container have opened up new fields of application. Demand for beer cans continues strong, this type consuming 40,917 tons of tin plate in 1944 and 492,049 tons in 1950. The tonnage promises to be even higher in 1953.

Greater Capacity—Meanwhile, facilities for producing tin products have increased steadily. Unofficial estimates place capacity at more than 6.5-million tons, with the emphasis still on electrolytic plate. Currently, close to 60 per cent of the tin plate produced is said to be this type. Some believe that the ratio of electrolytic plate to hot-dipped will reach 70-30 before stabilizing.

Continuous tinning by the electrolytic process began in 1937, around the beginning of last year there were 30 electrolytic tin lines capable of producing 3.5 million tons of electrolytic plate (40 pound grade). Since then, more lines have been added, more facilities under construction.

Changing Ratios—As the



A rapidly growing segment of the container industry is that which turns out the larger shipping units. Here's a shell welding machine in action.

SHIPMENTS OF STEEL TO THE CONTAINER INDUSTRY

(Net Tons)

	9 mos. 1952	1951	1950	1949	1948
Sanitary	1,721,468	2,583,749	2,477,617	1,893,099	2,131,669
General line	1,046,090	1,536,743	1,528,667	1,229,124	1,361,281
Cans and other closures	205,553	356,653	332,217	231,293	217,590
11 barrels and drums 9 gage and heavier	400,958	782,602	590,115	611,840	653,288
11 barrels and drums lighter than 9 gage	133,168	276,522	221,040	158,142	229,995
Shipping pails	87,754	186,957	114,118	86,487	85,631
Compressed gas cylinders	60,383	93,674	97,154	78,666	129,145
Coverage, boxes, strapping and all others	353,713	707,054	550,236	366,984	493,774
GRAND TOTAL	4,009,087	6,523,954	5,911,164	4,655,635	5,302,373

on of electrolytic plate production has increased, the ratio of tin plate has decreased, because of the thinner and more uniform coatings that can be applied by the electrolytic method. However, despite lighter coatings, application of electrolytic tin plate continued to expand, as further refinements are made in the process.

is now satisfactory for the carrying of vegetable products, although high acid products and a large quantity of vegetables are packed in hot-dipped tin plate.

Meanwhile, extensive research is going on toward the use of coating weight electrolytic plate to further replace some hot-dipped applications.

Sing Fast—Manufacturers of barrels and drums and shipping pails, who represent an increasingly important segment of the container industry, anticipate business this year, but will keep a close eye on carloadings, say index.

quick glance at the development of the shipping container industry since it was established in the present century, reveals it was producing 2.4-million tons of all types by 1922 and, expanding by leaps and bounds, was turning out 111,734,000 units annually by 1951.

ew Strength—Today the annual capacity of the industry is rated at 177.5-million units—1-million heavy drums, 15-million light drums and 110-million pails. About 45 com-

panies, with 60 plants, make drums or drums and pails, and 25 others make only shipping pails.

Indicative of the distribution of shipping containers are figures below from the Department of Commerce and the Steel Shipping Container Institute, showing purchases of drums and pails by industries for 1951, the last year for which full statistics are available:

	Drums, 18 gauge and heavier	Drums, 19 gauge and lighter	Drums, 20 gauge and lighter
Food	6.34%	1.63%	3.04%
Petroleum	52.39	50.36	28.78
Chemical	21.93	24.43	13.74
Paint and Varnish	4.56	3.04	31.09
Other	4.06	18.61	20.72
Armed Services	Direct	10.72	1.93
			2.63

War Activities—In times of war the shipping container industry normally makes additional products requiring other equipment: 5-gallon blitz cans; powder shipping containers (various types); ammunition shipping boxes (40-mm, etc.); flare bombs; parachute containers; practice bombs; aircraft engine cases; multiple bomb containers (aerial); precision instrument rustproof containers; army and navy type rockets; and miscellaneous special type metal packages.

Stimulating growth has been the development of automatic machinery which has increased the rate of production from 25 to 50 drums per hour back in the hand-operated machinery days to as high as 600 at present, thus making it possible

to produce those units at well below the average advance in general commodity prices. Also contributing greatly has been research, especially with regard to protective coating.

Development—Latest major step is a broad and continuing program of research and development at the Battelle Memorial Institute, Columbus, O., sponsored by Steel Shipping Containers Institute.

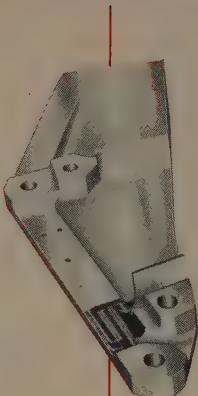
One direct result of this research was the discovery of formula Synthetasine 100, which has considerably broadened the field of products to be successfully shipped in lined steel containers. Studies show Synthetasine 100 chemically resistant to alkali, dilute mineral acids, chlorinated solvents, formaldehyde (36-38 per cent aqueous), detergents, detergents combined with hydrocarbon solvent, fatty acid, emulsions.

Economy—Most steel shipping containers are reused many times. For reconditioning these containers there is an organized reconditioning industry, comprising more than 250 companies throughout the country. A number of buyers of new drums have facilities for repairing and reconditioning them. About 60-million steel drums are reconditioned annually at a saving of about 1.8-million tons of sheet.

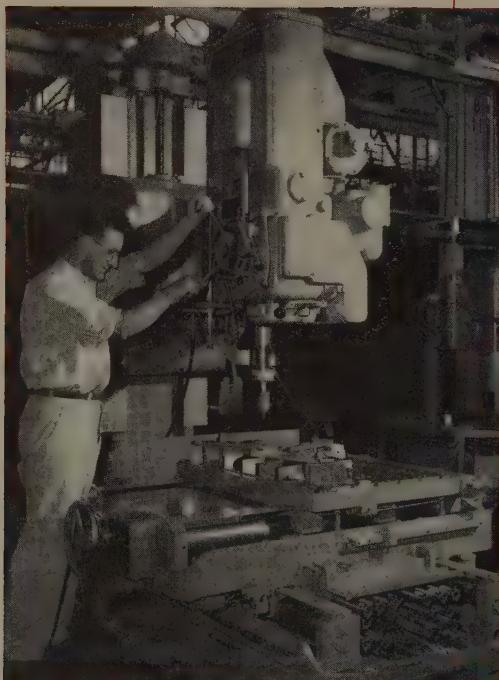
The trends and developments in containers of all types led one executive to say this about his industry: "In 1953 there will probably be more things in more kinds of metal containers than ever before in history."

where

Precision
counts



a
natural
combination
hard to beat . . .



Precision work materially reduces if not entirely eliminating spoilage and provides complete interchangeability of parts.

Bullard 30 x 20 Spacing Table installed on Cincinnati-Bickford fixed arm Precision Drilling Machine at Convair (Consolidated Vultee Aircraft Corporation, San Diego, California) is proving that these two units "pay-off" in elimination of jig cost, speeding-up production and accuracy in repetitive drilling on a variety of work.

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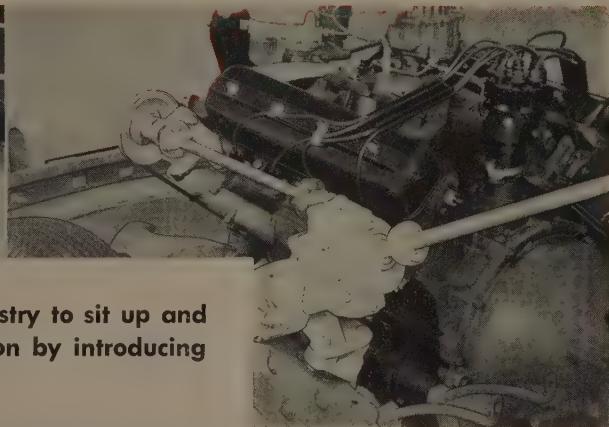
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Mirrors of Motordom



Studebaker is forcing the rest of the industry to sit up and take notice as it duplicates its 1946 action by introducing models with markedly different styling

DETROIT

THE automobile industry is facing the probable ultimate effect of the introduction by Studebaker of its new models which feature sharp breaks in styling. . . . "The words written in this column almost seven years ago are *en apropos*. The "which-way-is-it-going" car that Studebaker brought out in May, 1946, was the target of countless jokes but its ultimate effects on the industry's styling thought have certainly been considerable.

Controversial—The South Bend manufacturer's new offering is, if nothing else, controversial. As it has several postwar models, Studebaker again shows a willingness to be unconventional in the design of production cars.

Designer Raymond Loewy and Studebaker Corp. broke with a lot of traditions to work out lines of the ultra-sporty hard-top and five-passenger coupe. These are the two models in which "new look" is most pronounced. In these the over-all height of 5/16 in. is several inches lower than any other American production automobile. Length has been increased almost five inches. The trunk and hood lines are also lower and longer. Whereas other car makers are raising their trunk lids and then covering the hump with other fenders, Studebaker takes a calculated risk on the amount of trunk space the average owner really demands and slims the trunk down to the point where the spare

tire cannot be mounted upright in it but must lie horizontally.

Against the Trend—It deliberately reveals more of the rear wheels when other cars—experimentals excluded—tend to cover them as fully as possible. With other car makers boasting of greater seat widths, Studebaker robs the rear seat of some of its space by affixing a center arm rest. This is made necessary by the dropped floor in the passenger compartment to get sufficient headroom for the rear seat passengers, and by the much higher bulge of the drive shaft tunnel.

In its departure from the massive front end appearance sought by many makers, Studebaker's styling is most daring. The sharply forward sloping hood and the de-emphasized grille openings will be among the most discussed features of the new cars. And whereas other car makers have stepped up their application of chrome to body and fender panels, Studebaker uses none as side trimming but is liberal with it for window reveals and along the top of the rear fender. Bumpers are closely integrated with the body and are relatively narrow.

The Exception—Sedan models are somewhat more conventional. Many of the same line changes have been made as with the coupes but to a lesser degree. Larger windows, including a one-piece, wrap-around rear window, increase glass use a third over last year.

Most of the engineering changes

Studebaker Style, Steering

Studebaker manages a slinky "European" look in the 1953 models just released. Particularly noticeable are the long downsweeping hood and dished wheel covers. The Borg-Warner power steering unit, right, optional on 1953 models, is driven directly from the engine by a V-belt and auxiliary shaft. It aids steering through two multiple disk, counter rotating clutch assemblies. Power steering is currently offered on the Commander and Land Cruiser and will be available for Champions later this year

are minor. The six cylinder and V-8 engines are mounted somewhat differently and carburetors have been redesigned to fit under the lower hood.

Power Steering—The big engineering news, however, is the development, with Borg-Warner Corp., of a mechanical power steering device. Heretofore, power steering has been hydraulically actuated and major problems have been oil pump noise, complexity of the "plumbing," and bulk and expense of the units. The mechanical power steering system for Studebaker consists of a power unit, steering shaft-mounted, a power input shaft and a pulley assembly which takes power by V-belt from the engine. The power unit, enclosing a gear train and two opposite-rotating multiple disc clutches, measures only six inches square and weighs only 22 pounds. Weight of some of the hydraulic

devices amounts to approximately 60 pounds.

As long as the engine is running, the ring gears in the power unit also revolve. A turn of the steering wheel brings either the upper or lower ring gear and clutch into contact with the steering gear and transfers engine power to the steering gear. The reduction in steering effort is calculated to be 75 per cent less. The power boost comes only when force applied at the steering wheel exceeds two pounds. Initially available only on Commanders and Land Cruisers the unit will be offered later this year on Studebaker's Champion models.

A Gamble — Studebaker whose percentage of convertible production has been higher than its percentage of industry production risks that segment of the market entirely by leaving a convertible out of its 1953 line-up. Such a body type can be reinstated if the dealers report would-be-purchaser disappointment, but the thinking is that convertible fanciers will be well satisfied with the sportiness of the new coupes. Studebaker people also discussed advisability of entering into station wagon production but decided against it, as a matter of policy, at least for the time being.

Price changes for the most part are minor, from a few cents to a few dollars. The five-inch longer five passenger coupes are up \$10-12 from last year's models but the hard-tops have been reduced \$98 in the Champion series and \$106 in the Commander line.

Because of Competition—These are some of the reasons why Harold S. Vance, Studebaker president and board chairman, believes his company is ready for "normal competition", and why he thinks Studebaker can cut a larger share of the industry's sales for itself. Studebaker's bigger slice, he feels, "will need to come from those producers in the industry who already have the larger volume". Other observers, who think the Studebaker gamble will have a big payoff in the dealer showrooms, take a somewhat different view. They think 1953 may squeeze some of the other independents pretty badly while being rough on only one of the big three.

Auto, Truck Output

	U. S. and Canada	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	293,722	571,442
September	592,253	505,758
October	645,862	558,971
November	550,885	480,323
December	568,577*	402,729
Total	5,976,189	7,179,161
Week Ended	1952	1951
Dec. 27	102,558	39,488
	1953	1952
Jan. 3	106,102	53,601
Jan. 10	139,620	92,741
Jan. 17	148,718	98,669
Jan. 24	149,000*	94,722

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

GM Motorama: Lavish Salesman

General Motors Corp. pulled all the sales and promotional stops at its Motorama in New York's Waldorf-Astoria because it's betting there will be a virtual end to all restrictions on auto production by Apr. 1.

Most eye-catching of the GM products on display were the reinforced plastic cars. None of them is likely to be built in any significant quantities for commercial purposes, but if any is, the body will probably be turned out in steel instead of plastic. Another eyecatcher was the four-door, hardtop Cadillac sedan without door pillars built for C. E. Wilson. The styling might enjoy good acceptance as a new body series in the Cadillac line.

In February when the Motorama moves to Miami, Fla., where more room will be available, the show will be much heavier on research and engineering exhibits. The mock-up of GM's power steering drew crowds in New York.

Price Cutting Mounts

Anxiety in some dealerships is being expressed in a traditional way—price cutting. A sales slump has overtaken some of the new models in an alarming fashion, and dealers in other makes are not as happy as might be expected over this development. A competitor

down the street who is giving large allowances for the trade-in or is knocking \$200-300 or more off his list prices puts the public in a bargain-driving mood.

For some of the companies whose new products have caught on well and who are trying to hold their dealerships, the situation is disadvantageous, however, and the dealers and factory bodies are watching closely. Dealer pressure on the company has become intense, and one of several courses appear certain to it: Bring down list prices appreciably so that the dealer margin is no longer in such a squeeze, bring out new models quickly, or put some of the engineering "second goods" now tagged "for future use" into production right away to boost sales.

Heavy Sales for Auto Parts

Intense activity for the automotive parts and accessory industry will continue through 1953, General Motors Corp. officials say. Contributing factors will be normal automotive replacement parts inventories and more vehicles between five and ten years of age on the road.

Sales trends are continuing upward in the AC Spark Plug division of General Motors, after setting a record in 1952. Employment is steadily rising, but GM spokesman say a critical shortage exists of men in engineering and technical fields.

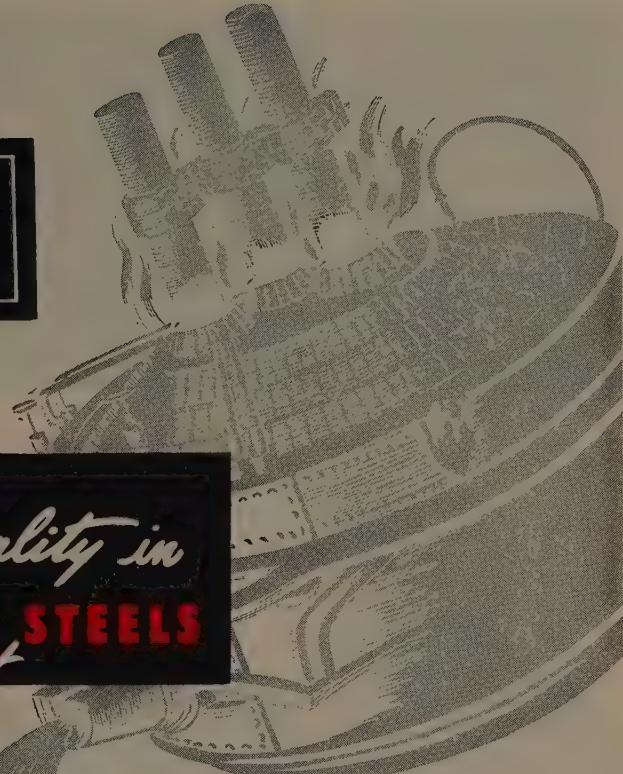
Motordom Murmurs

A torque converter automatic transmission is understood scheduled for release to production in March by Plymouth Division. Cadillac in 1954 models reportedly will have major body changes, including "step-down" floor design for lower height . . . Ford's overhead valve V-8 engine will be in production soon enough to be mid-year introduction if competitive conditions call for it . . . Dodge will put its V-8 engine in trucks this year . . . More business in store for custom body builders with the progressive widening of Packard's luxury line . . . Hudson's "jet" compact car in the popular price class will be introduced next month.



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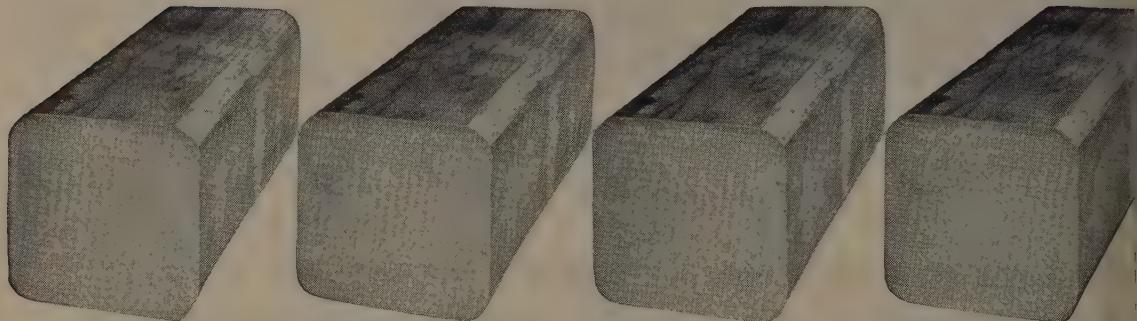
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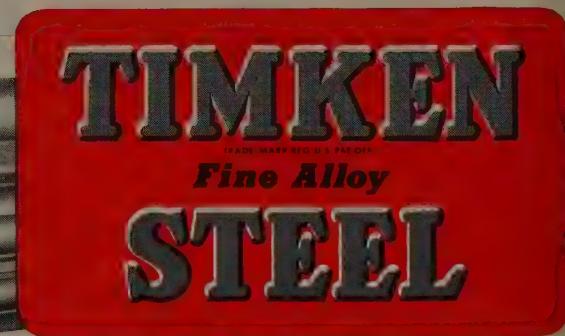
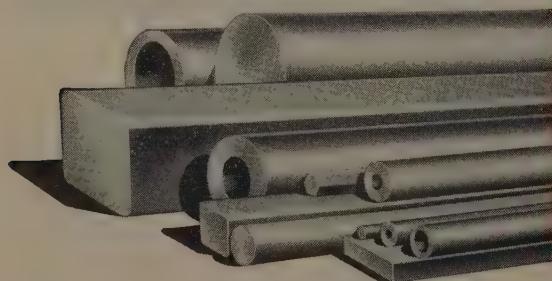
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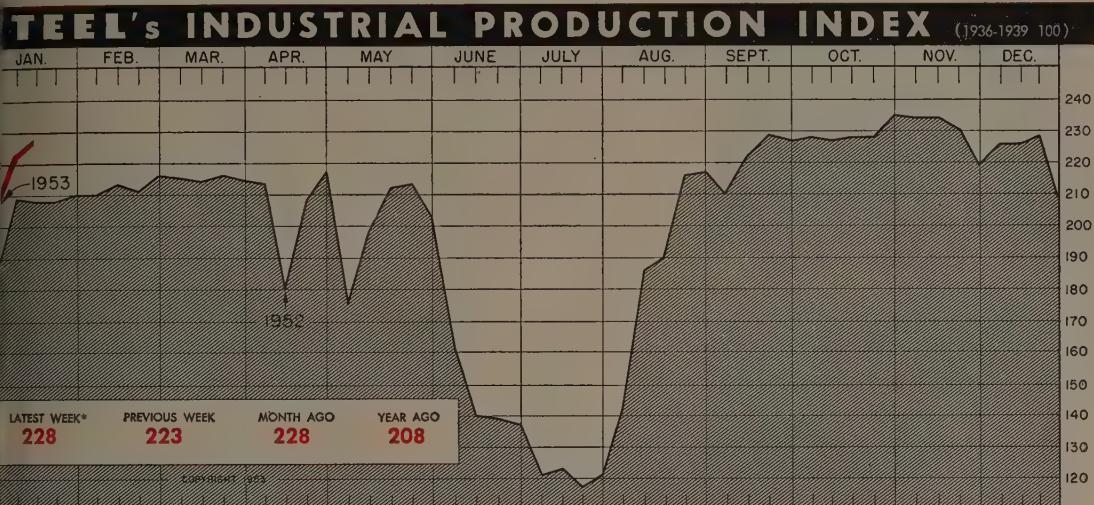
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YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBES

The Business Trend



ended Jan. 17 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Industrial activity index continues to climb, although freight car loadings decline. Businessmen watch the new administration before placing new orders

NESS may be slackening its a little, just to catch its

ny industries boosting output the end of the steel strike be applying the brakes on new s as businessmen await early ons of the new administration. This possibility is seen in the -than-seasonal decline in car loadings while other indicators of production con to rise.

Association of American oads reports that loading of freight in January has ed about 7 per cent under corresponding weeks in 1952 more than 10 per cent under comparable weeks in 1951. Ex- ore, shipments are declin all commodity groups clas by the association.

ificant Lags—Most signifi to the metalworking industry he declines in the merchandise miscellaneous freight categor in the week ended Jan. 10, the on's railroads shipped 6 per less merchandise than they in the comparable week of despite considerable improvement in consumer production and

demand. Miscellaneous freight, which includes all other durables, are down 2 per cent—a noteworthy decline, considering the over-the-year rise in defense and defense supporting production.

Production Is Rising—Other indicators are continuing to move upward, however, and these gains offset the depressive effects of the fewer car loadings. STEEL's industrial activity index during the week ended Jan. 17 rose 5 points to 228 per cent of the 1936-1939 average. Steel production that week climbed 1.5 percentage points to 99.5 per cent of industry's rated capacity on Jan. 1, 1953. Electricity production, aided by January temperatures, reached a new peak. Production of passenger cars and trucks in the week ended Jan. 17 rose near the high levels attained in November.

Steel Output Heavy...

Steel production is continuing at near-record levels, as mills strive to lessen the wide gap between supply and demand. The American Iron & Steel Institute estimates that furnaces in the week ended Jan. 24 poured 2,234,000 net tons of

steel for ingots and castings. In the comparable week in 1952, steel output stood at 2,071,000 net tons.

Passenger Car Outlook...

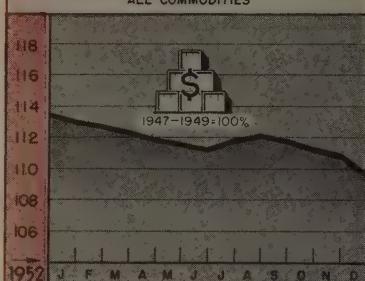
The passenger car industry hopes to push output in the first half of 1953 far beyond the limited number of assemblies implied by materials allocations. Steel allotments, for instance, are expected to assure production of 2.5 million passenger cars from Jan. 1 to June 30. But automakers are setting their sights for these months at somewhere over the 3-million unit mark, according to *Ward's Automotive Reports*.

To near this goal, passenger car makers will probably obtain much of the extra steel via the conversion route. Foreign steel will be snapped up too. The industry also is permitted to borrow during the final 15 days of a quarter some of the steel allocated for the succeeding quarter; borrowings may be extensive near the end of June.

Another, but more remote, possibility is that steel decontrol-day may occur before June 30. Many passenger car manufacturers, pointing to the enormous increase in steel production and the stretch-out of defense orders, are expecting quick decontrol on many steel industry products.

At present, the automotive in-

WHOLESALE PRICE INDEX ALL COMMODITIES



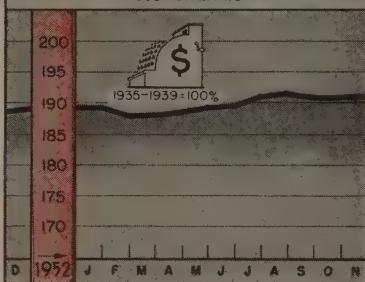
Wholesale Price Index

(1947-1949=100)

	1952	1951	1950
Jan.	113.0	115.0	97.7
Feb.	112.6	116.5	98.3
Mar.	112.3	116.5	98.5
Apr.	111.8	116.3	98.5
May	111.6	115.9	99.6
June	111.3	115.1	100.2
July	111.8	114.2	103.0
Aug.	112.2	113.7	105.2
Sept.	111.7	113.4	107.1
Oct.	111.1	113.7	107.7
Nov.	110.7	113.6	109.3
Dec.	109.6	113.5	112.1

U. S. Bureau of Labor Statistics

CONSUMERS' PRICE INDEX COST OF LIVING



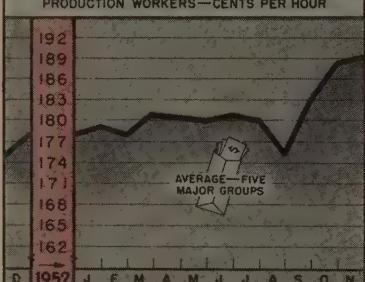
Consumer Price Index

(1935-1939=100)

	1952	1951	1950
Jan.	189.1	181.5	165.2
Feb.	187.9	183.8	167.9
Mar.	188.0	184.5	168.4
Apr.	188.8	184.6	168.5
May	189.0	185.2	169.3
June	189.6	185.2	170.2
July	190.8	185.5	172.0
Aug.	191.1	185.5	173.4
Sept.	190.8	186.6	174.6
Oct.	190.9	187.4	175.6
Nov.	191.1	188.6	176.4
Dec.	190.7	189.1	176.8

U. S. Bureau of Labor Statistics

METALWORKING WAGES PRODUCTION WORKERS—CENTS PER HOUR



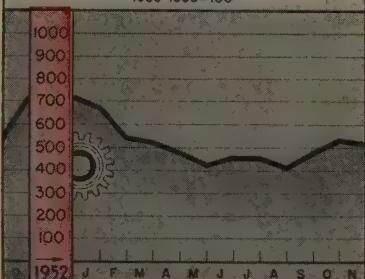
Metalworking Wages (cents)

Production Workers—Five Major Groups				
	Prim.	Fab.	Mach.	
1951	181.9	188.9	170.7	165.5
Nov.	183.6	170.0	181.7	167.0
Dec.	183.6	170.0	181.7	167.0
1952	184.7	170.3	182.0	166.9
Jan.	183.1	170.5	183.0	166.8
Feb.	183.1	170.5	183.0	166.8
Mar.	184.8	171.5	184.1	169.5
Apr.	183.0	170.9	183.6	169.5
May	184.0	171.9	184.0	169.5
June	183.0	171.5	184.7	170.4
July	181.3	170.0	184.4	169.5
Aug.	183.7	172.4	184.5	171.6
Sept.	199.1	176.3	187.1	173.6
Oct.	199.0	178.9	188.5	173.0
Nov.	200.0	179.5	189.1	173.8
Dec.	204.4			

U. S. Bureau of Labor Statistics

GEAR SALES INDEX

1935-1939=100



Gear Sales Index

(1935-1939=100)

	1952	1951	1950
Jan.	670.6	764.6	280.2
Feb.	539.5	809.1	272.9
Mar.	517.1	830.7	353.4
Apr.	478.7	742.5	328.6
May	425.9	667.1	362.1
June	452.3	800.9	401.0
July	453.9	589.1	410.7
Aug.	413.9	564.2	617.4
Sept.	485.0	630.1	654.5
Oct.	533.1	703.4	564.8
Nov.	516.0	530.0	564.9
Dec.	716.5	680.4	

American Gear Mfrs. Assn.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 24	Gray Iron Castings	Jan. 12	Ranges, Elec.	Dec. 8
Durable Goods	Jan. 18	Indus. Production	Dec. 22	Refrigerators	Dec. 8
Employ. Metalwkg.	Jan. 18	Ironers	Dec. 22	Steel Castings	Jan. 12
Employ. Steel	Dec. 15	Machining Tools	Dec. 15	Steel Forgings	Jan. 12
Fab. Struc. Steel	Dec. 22	Malleable Castings	Jan. 12	Steel Shipments	Nov. 3
Foundry Equip.	Dec. 29	Pumps	Dec. 8	Vacuum Cleaners	Dec. 22
Furnaces, Indus.	Dec. 29	Radio, TV	Dec. 15	Washers	Dec. 29
Freight Cars	Dec. 29	Ranges, Gas	Jan. 18	Water Heaters	Jan. 18

dustry is trying nearly every to raise both passenger car truck production. Manufacture in the U. S. and Canada in the ended Jan. 17 raised produc more than 9000 units to 141 passenger cars and trucks, approximately 50 per cent over production in the corresponding of 1952. U. S. and Canadian production in the week ended Jan. 2 is estimated by STEEL at 141 passenger cars and trucks.

Living Costs Level Out...

Indicating that many inflationary pressures are receding, the of living is remaining at level attained in the midsummer of 1952. The consumer price index of the Bureau of Labor Statistics in month ended Dec. 15 dipped of a point to 190.7 per cent of 1935-1939 average. (See chart left.)

At the same time, the bureau announces that its new cost-of-living index will be issued at the end of February. The new index—causing labor controversies in Detroit—is based on 1947-1949=100.

Ewan Clague, commissioner of labor statistics, says that the new index will better reflect today's purchasing patterns of city and salary workers. Improved accuracy also will be attained by increasing the items priced to 300 from 250 commodities and by expanding the number of cities surveyed each month.

New Record in Steel Jobs...

Employment in the iron and steel industry continued on its record-breaking path by increasing 500 persons to 680,300 workers on Dec. 1. So says the American Iron & Steel Institute, which estimates that average hourly earnings in November rose 24 cents. Job earners worked an average of 40 hours a week in November, or 24 hours less than the postwar record set in October. Industry payroll in November is estimated at \$269.7 million, nearly \$13.2 million under October, but \$27.6 million over wages paid in November, 1952.

Most Store Sales Good...

Most retailers are chalkin good sales volumes for January. The Federal Reserve Board says

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity) ²	99.5	98.0	97.0
Electric Power Distributed (million kwhr)	8,190	8,185	7,340
Luminous Coal Output (daily av.—1000 tons)	1,280 ¹	1,277	1,234
Oilume Production (daily av.—1000 bbl)	6,480 ²	6,468	6,196
Construction Volume (ENR—millions)	\$548.8	\$323.7	\$249.2
Automobile, Truck Output (Ward's—units)	148,718	139,620	98,669
TRADE			
Light Car Loadings (unit—1000 cars)	690	688	748
Business Failures (Dun & Bradstreet, number)	158	163	158
Money in Circulation (millions) ³	\$29,884	\$30,153	\$28,526
Net Store Sales (changes from year ago) ³	-3%	+5%	-14%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	\$16,551	\$16,896	\$16,633
Federal Gross Debt (billions)	\$267.3	\$267.3	\$259.3
Stock Volume, NYSE (millions)	19.7	19.6	15.7
Stock Sales, NYSE (thousands of shares)	7,723	9,845	8,339
Bonds and Investments (billions) ⁴	\$78.1	\$78.5	\$73.7
United States Gov't. Obligations Held (billions) ⁴	\$32.4	\$32.5	\$32.1
PRICES			
EEEL's Weighted Finished Steel Price Index ⁵	181.31	181.31	171.92
EEEL's Nonferrous Metal Price Index ⁶	213.2	216.0	234.9
Commodities ⁷	109.7	109.8	113.5
Commodities Other Than Farm and Foods ⁷	112.8	112.9	114.1

ates on request. ¹Preliminary. ²Weekly capacities net tons: 1952, 2,077,040; 1953, 2,254,459. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-39=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100.

the nation's department stores in January are taking in nearly 3 cent more in dollar volume in the comparable weeks in January. And indications are that demand is higher than last year's volume as transportation sales in New York and Philadelphia sheared sales in those areas. For the week ended Jan. 17, department store sales in metropolitan Philadelphia plunged 25 per cent over the like week in 1951. New York stores, on the other hand, sales dipped only 2 per cent. The reductions are said to be due to many New Yorkers to shopping centers.

Business Failures Ebb...

Business failures in 1952 dropped 6 per cent, marking the third consecutive year of downturn. But figures of manufacturing and mining enterprises increased over 1951. Company mortalities in 1952 totalled 7611 firms, compared with 73 failures in 1951, says Dun & Bradstreet Inc. Yet failures in the manufacturing and mining category rose by 47 companies to 1581 mortalities. Failures in 1952 increased to 50 firms from 40 in the iron and steel industry, increased 131 firms from 106 in the machinery industry and 44 makers of transportation equipment decided

to close their doors in 1952, compared with only 18 in 1951.

TV Production Soars...

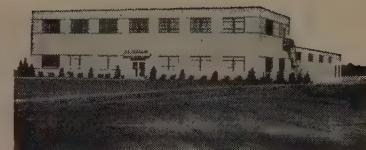
Television manufacturers will show an enormous sales volume for 1952, despite the depressive effects of materials shortages. The Radio-Television Manufacturers Association says that 5.2 million TV sets were shipped to dealers in 1952 by Dec. 1. The 5.2 million total compares with 4.4 million TV units shipped in the first 11 months of 1951.

Home Construction High...

Homebuilding in 1952 edged up over the 1951 unit-total but was still under the record dwelling construction in 1950. The Bureau of Labor Statistics reports that 1,131,300 nonfarm dwelling units were put in place during 1952, compared with 1,074,300 units in 1951 and 1,396,000 units during 1950.

Trends Fore and Aft...

Total value of mineral production in 1952 remained at \$13.5 billion, the same as in 1951... High employment in industrial construction, will continue for at least the first six months of 1953, says the National Constructors Association.



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• Engineers at Jackson Industries, Inc., Chicago, Ill. are "on the beam" when it comes to maintaining TV quality at production line speeds. They found the SPEED NUT way of attaching their new Tri-Lok television chassis to the cabinet picked up a neat 63% production savings! This attachment was one of their toughest fastening problems... to solve it Jackson found a standard Tinnerman part tailor-made and engineered for the job!

Four angle brackets are used to fasten the chassis to the cabinet. In the old way, an angle bracket was threaded to receive a machine screw, and it was necessary to align the screws perfectly with the threaded holes since the attachment is in a "blind" position.

SPEED NUTS eliminate the tapping operation required

in threading the angle brackets, making hole alignment easier, faster! Now Jackson has adapted this part into their standards along with a 63% savings in time and materials-handling!

You can turn your fastening problems into production savings... do as thousands of manufacturers are doing... turn to Tinnerman for a FREE FASTENING ANALYSIS of your products. The Tinnerman representative in your area will be happy to give you the full details on this great service. Call on him today or write direct to: TINNERMAN PRODUCTS, INC., Dept. 12, Box 6688, Cleveland 1, Ohio.

In Canada: Dominion Fasteners Ltd., Hamilton, Ontario. In Great Britain: Simmonds Aerocessories, Ltd., Treforest, Wales. In France: Aerocoessaires Simmonds, S.A.—7 rue Henry Barbusse, Levallois (Seine).

THE OLD WAY:
The 4 angle brackets were drilled and tapped to receive machine screws in attaching the chassis to the cabinet; hole alignment was always a problem since brackets are in "blind" positions.

THE SPEED NUT WAY:
The SPEED NUT Principle of Spring Tension fastening applied to the 4 angle brackets eliminates these hole alignment problems providing sturdy, vibration-proof attachment.

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... sales position at Iron Fireman



SAMUEL S. AUCHINCLOSS
... new president of DeWalt Inc.



WILLIAM H. BENNETT
... director of engineering at H-P-M

Iron Fireman Corp., Cleveland, promoted **S. H. Beach** to industrial sales manager for the U. S., a newly created position. Formerly midwest division engineer with headquarters in Cleveland, he was advanced a year ago to service and installation engineering manager.

Pittsburgh Screw & Bolt Corp., Pittsburgh, appointed **Robert B. Sie** as assistant vice president. He formerly was assistant manager of sales, Jones & Laughlin Corp., and recently was associated with Forbes Steel Corp.

Indler-Boyd Co., Pittsburgh, appointed **E. A. Duffy** vice president, general manager and a director. He has been with the company since 1945 serving in various sales capacities including the position of vice president-sales. In his new position he continues direction of sales as well as all other company operations.

Ant A. Sattem was promoted from general sales manager to vice president in charge of sales of **Alaria Engineering Corp.**, New York.

C. Bleam and **R. E. Goodfriend** were made district supervisors for **seph Dixon Crucible Co.** Mr. Bleam will have headquarters in Chicago, Mr. Goodfriend in Columbus, O.

Samuel S. Auchincloss was elected president, **DeWalt Inc.**, Lancaster, Pa., subsidiary, American Machine & Foundry Co. Executive vice president since August, 1952, he now succeeds **Paul Gardner**, resigned. **Jerome H. Eigenberger** was made district manager in the southwest with headquarters in Houston.

Harland L. Farling was named chief metallurgist of **Republic Steel Corp.**'s Cleveland district steel plant to succeed **Thomas M. Chapman**, who assumes new duties as contact metallurgist for the district's bar mills.

Northrop Aircraft Inc., Hawthorne, Calif., appointed **Dr. William F. Ballhaus** assistant chief engineer in charge of analytical activities. He was formerly chief of preliminary design at **Consolidated-Vultee Aircraft Corp.** **Clare Harris** was named assistant chief engineer in charge of projects and components; **Frank B. Bolte** chief of engineering research; **Stanley J. Worth** chief engineering administrator; **W. R. Clay** chief project engineer; and **R. A. Hall** chief of the newly established electro-mechanical laboratories.

H. G. Engel was made assistant general sales manager, **Four Wheel Drive Auto Co.**, Clintonville, Wis.

Hydraulic Press Mfg. Co., Mt. Gilead, O., promoted **William H. Bennett** to director of engineering. He was assistant sales manager before assuming his new duties.

Carl A. Boehme was appointed assistant superintendent, cold strip department, **Campbell Works**, **Youngstown Sheet & Tube Co.**, Youngstown.

New vice presidents of **Great Lakes Steel Corp.**, Ecorse, Mich., are **C. L. Bayer** who also becomes assistant manager of operations; **Paul Carnahan** in charge of sales; **William Kerber** attached to the president's office for special assignments. **Charles P. Betz**, blast furnace division general superintendent, was elected assistant vice president.

John A. Slenker was named assistant vice president of operations of **American Steel & Wire Division**, Cleveland, U. S. Steel Corp. He is succeeded as district manager of operations at Duluth by **Harold Cope**, formerly general superintendent for the wire division in **Dornora, Pa.**

J. D. Harby was made superintendent of instrument engineering and **J. D. Dutcher** superintendent of instrument manufacturing by **Bausch**



FRANK R. S. KAPLAN
... president of Ohio Seamless Tube



DAVID J. MARCUS
... Steelcraft V. P.-purchasing



JOHN SILVER
... division V. P. at Motorola

& Lomb Optical Co., Rochester, N. Y.

Frank R. S. Kaplan was elected president and director, Ohio Seamless Tube Co., Shelby, O., which was recently acquired by Copperweld Steel Co. C. A. Taylor was elected vice president and controller, and four directors of Copperweld to serve on the board of Ohio Seamless are: H. G. Riter, III, D. V. Sawhill, R. V. Mitchell and L. B. Keplinger. W. C. Connally was elected chairman of the board.

Hugh S. Terrell was appointed assistant manager of sales for Union Drawn Steel Division, Republic Steel Corp. He continues headquarters in Massillon, O., at the division's general offices. In his new post he succeeds Henderson E. McPherson, transferred to Republic's Pittsburgh district sales office as sales manager.

Steelcraft Mfg. Co., Rossmoyne, O., appointed David J. Marcus as vice president in charge of purchasing and Ben J. Sloman as assistant secretary. Mr. Marcus has been director of purchases for four years.

Whitney B. Miller was appointed by Moore Products Co. as manager of the Louisville branch office. He previously was at Houston.

At Taft-Peirce Mfg. Co. Wendell F. Carney becomes New York sales manager to replace Joseph N. Tellier, retired. Frank G. Billmire replaces Mr. Carney as sales manager, Chicago territory.

John Silver, formerly general manager, communications and electronics division, was promoted to vice president-operations in the division for Motorola Inc., Chicago.

Daniel D. Sugerman was placed in charge of the structural steel and reinforcing bar division and appointed assistant to the sales manager at Laube Steel Co., Chicago. He also serves as manager of the aluminum division.

In the purchasing division of United States Steel Corp., Pittsburgh, R. M. Brown was made purchasing agent, iron and steel scrap; W. W. Crawford purchasing agent and R. F. Dyson assistant purchasing agent, electrical and mechanical equipment, and R. D. Crow-

ley purchasing agent and R. J. Mackenzie assistant purchasing agent, construction, materials services.

A. M. Kennedy Jr., E. S. Goodwin and J. S. Jacox were appointed assistant general managers of purchasing for Westinghouse Electric Corp., Pittsburgh.

Newly appointed executive engineers of Chrysler Corp., Detroit, are: P. C. Ackerman, laboratories; A. B. Couture, laboratories; A. G. Herreshoff, development design; P. J. Kent, electrical; E. P. Lathrop, truck engineering; F. W. Shirk, chassis design; and U. L. Thomas, body engineering. The following were named chief engineers: H. E. Chesebrough, body engineering; A. G. Loofbourrow, chassis design; I. C. McKechnie, electrical; A. Pfeiffer, laboratories; S. J. Torkin, truck engineering; and C. Utz, ordnance.

Arwood Precision Casting Co., Brooklyn, N. Y., announces that Feb. 1 William O. Sweeney will join the organization as assistant president of sales. He formerly was sales and development manager, Haynes Stellite Division, Union Carbide & Carbon Corp.

D. Pat Cromwell was appointed manager of blast furnaces and coke ovens of Ford Motor Co.'s Roswell plant, Dearborn, Mich. He succeeds Dan L. Newkirk, retired.

John V. Banks was appointed president in charge of manufacturing, automotive division, Kaiser-Frazer Corp., Willow Run, Mich., with supervision over automotive engineering and purchasing divisions.

Farrel-Birmingham Co. Inc., New Haven, Conn., appointed Roger J. Vaughan assistant general manager of the subsidiary, Consolidated Machine Tool Corp., Rochester, N. Y. He formerly was assistant general manager of the Farrel-Birmingham Buffalo plant.

Clifford Metal Sales Co., Providence, R. I., appointed Phillip Painchaud as sales engineer. Formerly district manager of Vere Copper & Brass Co. for more than 28 years, he now is available for consultation with Clifford customers regarding any problem



Toledo 96-C Press Equipped
with Fawick 22CB500 Airflex
Clutch and Fawick 21.5E475
Air-Ring Brake

The name FAWICK has gained world-wide industrial recognition for progressive policies in the development of power transmission products, represented by FAWICK AIRFLEX INDUSTRIAL CLUTCHES AND BRAKES.

Thousands of "performance-proved" FAWICK installations are providing industrial production equipment with new high standards in production speed and accuracy, safety, and operating efficiency.

You are cordially invited to use the outstanding FAWICK ENGINEERING SERVICE to investigate the advantages of FAWICK AIRFLEX INDUSTRIAL CLUTCHES AND BRAKES as applied to your production machines.

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FEDERAL FAWICK CORPORATION
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FAWICK *Airflex*
INDUSTRIAL CLUTCHES AND BRAKES



J. M. COSGROVE
... new position at Kaiser Steel



RALPH E. CLARRIDGE
... Taylor Instrument chief eng.



A. O. THALACKER
... president of Detrex

cerning metals and fabrication of metals.

J. M. Cosgrove was named to fill a newly created **Kaiser Steel Corp.** position of manager, tin plate sales, Fontana, Calif. He has been active at the company's home office in Oakland, Calif., in development work on the tin plate program.

R. H. Zeilman was named director of engineering at **Thew Shovel Co.**, Lorain, O. M. L. Sheetz was appointed chief executive engineer and O. Van Mehren chief design engineer. **E. C. Brekelbaum**, former vice president and executive engineer, **Harnischfeger Corp.**, was made director of methods, a newly created post.

Stamco Inc., New Bremen, O., promoted **Elton W. Bruns** to chief engineer. **Richard E. Black** was made sales and service representative, **Myron L. Kuck** chief draftsman.

Ralph E. Clarridge became chief engineer for **Taylor Instrument Cos.**, Rochester, N. Y. He replaces **Karl H. Hubbard** who was made technical director. Mr. Hubbard also serves on the board of directors. Replacing Mr. Clarridge as manager, application engineering department, is **George E. Howard**, formerly assistant manager. Other changes involve **Robert D. Thompson**, named division head in charge of research, design, methods and technical sales, glass products division; **L. C. Liberatore**, **D. W. Shepardson** and **J. R. Davidson**, all engineering section heads.

George B. Haas was appointed advertising manager, **Earle M. Jorgensen Co.**, Los Angeles.

Chester C. Sanders was appointed supervisor of production and traffic at **Armcoc Steel Corp.**'s Zanesville, O., division. He succeeds **Ernest A. Stradley**, retired.

manager of the subsidiary, **United States Asbestos** division plant at Manheim, Pa., died Jan. 14.

Carl D. Fischer Jr., 71, president and general manager, **Wapakoneta Machine Co.**, Wapakoneta, O., died Dec. 28.

Clyde B. Ziegler, 54, purchasing agent for **General Electric Co.**, Erie, Pa., died Jan. 14.

Edward S. Alden, 64, vice president

A. O. Thalacker was elected president, **Detrex Corp.**, Detroit. **Robert A. Emmett Sr.**, founder and president, was elected chairman of the board. Mr. Thalacker, former vice president and general manager, joined the company in 19

W. R. Spearrin was appointed manager of the newly created standard products division at **Mattatuck Mfg. Co.**, Waterbury, Conn. **Joseph F. Dunn**, secretary, will be in charge of contract manufacturing sales division. Mr. Spearrin formerly was with **Scovill Mfg. Co.**

Richard J. Skillman was named purchasing agent, **General Refractories Co.**, Philadelphia. He succeeds **J. A. Ross**, appointed director of purchases.

Ted Nemes was named sales manager for the newly created air conditioning division of **Admiral Co.**, Chicago.

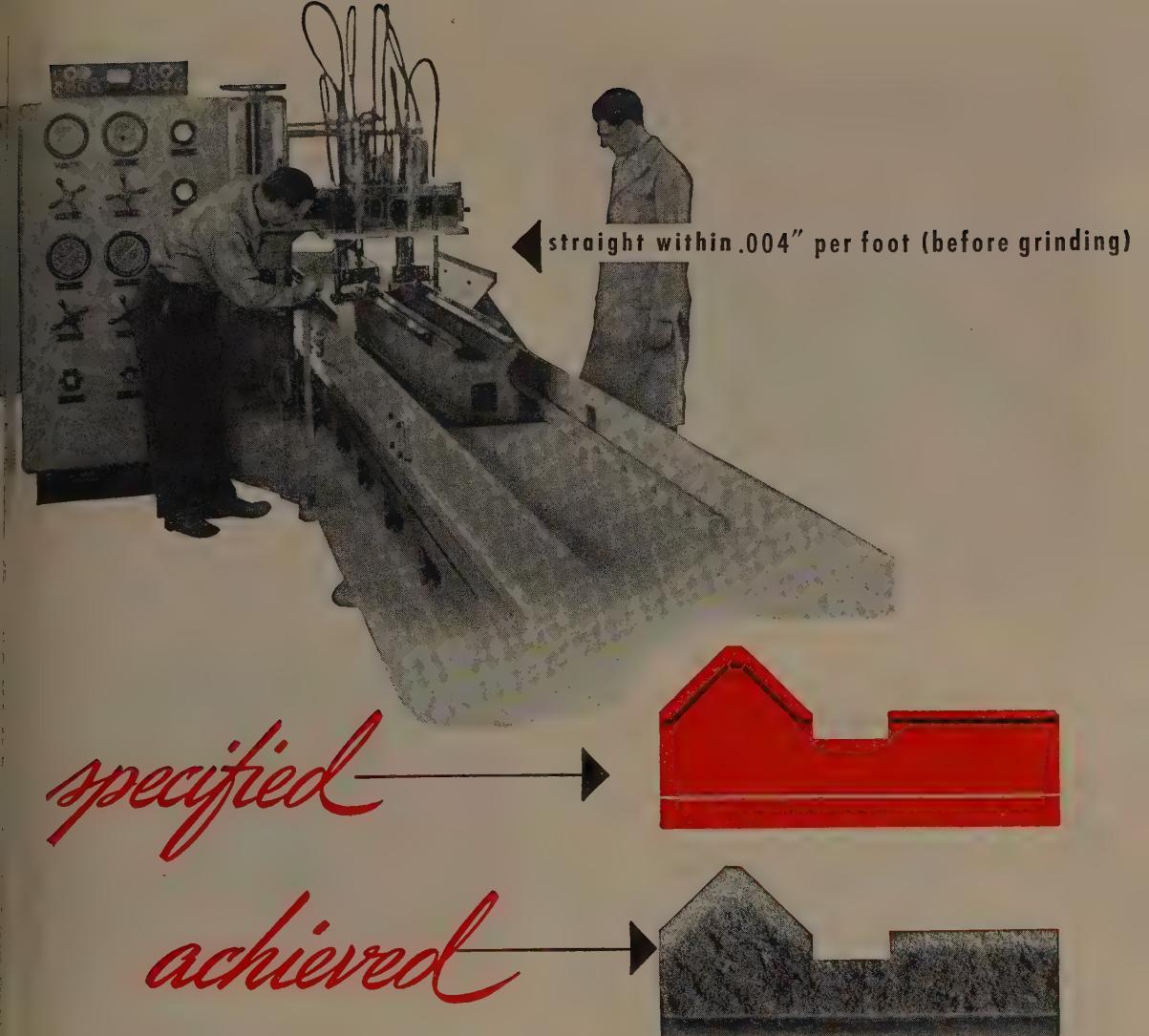
and treasurer, **Whitin Machine Works**, Whitinsville, Mass., died Jan. 10.

Frank J. Kotwas, 44, one of founders of **Rochester Tool & Co.**, Rochester, N. Y., died Jan.

G. R. McKeage, 74, head of **Bell Mfg. Co.**, Montrose, Pa., died Jan. 13.

Herman A. Bauers, 58, purchasing agent for **Cherry-Burrell Corp.**, Milwaukee, died Jan. 16.

G. R. Weber, 75, vice president, **Raybestos - Manhattan Inc.**, and



the bedways flame hardened to Shore 70-75

Cincinnati Flamatic makes news again: selective "flat hardening" that adds an important sales feature to Cincinnati Lathe & Tool Co. Tray-Top Cintilathes, and cuts costs at the same time. The job was to (1) give maximum surface hardness to the cast iron bedways (2) maintain a uniform pattern (3) keep the ways straight within grinding limits (4) obtain high production.

A special Flamatic hardening machine with stationary flame heads with integral spray water quench (see closeup) does a straight-line production job. Work travel is 6" per minute. Floor-to-floor time is less than one hour per 72" bed. Customer requirements more than fulfilled.

Gears, cams, rollers, parts with multiple diameters, etc., up to 18" OD depending on width or shafts up to 24" long depending on OD are readily handled on the Standard Flamatic. Write for Catalog M-1724 which gives case histories. Send part prints for analysis, recommendations.



flamatic

THE CINCINNATI MILLING MACHINE CO.

Cincinnati 9, Ohio, U.S.A.



1.



ELIMINATE
waste motions
in production

2.



SWITCH TO *Eaton* **Springtites** *and* **Sems**

(Bolt or screw preassembled with spring lock washer)

The motions used by a production line worker on bolted assembly operations shown in figure 1 above differ from the motions used by the worker pictured in figure 2. This difference is graphically shown by light lines taken from actual factory production photographs. This difference in motions made possible by Eaton Springtites and Sems means higher production quotas and increased manufacturing profits. Why?

Because they are preassembled units, Eaton Springtites and Sems eliminate the need for assembling the spring

lock washer on the bolt. Losses of separate washers and bolts are cut, while double requisitioning, purchasing, inventory is eliminated. Then too, Eaton Springtites and Sems are easy to use in hard-to-get-at places, and yet can be hopper fed for automatic screw driving. Most important, Eaton Reliance quality preassembled Standard ASA Spring lock washers and bolts assure greater product quality. See your nearest Reliance Sales Office for complete details on Eaton Springtites and Sems or write directly for Engineering Bulletin No. S-49.



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MANUFACTURING COMPANY



Springtites & Snap & Retaining Rings
Special Steels in bar, rod or coils
Spring Lock Washers
Hopper Feed

HEAVYWEIGHT METAL—A non-cutting metal of extremely high density is being marketed by Metal Carbides Corp., Youngstown. Chief constituent is tungsten and its specific gravity exceeds 17.5 grams per cubic centimeter or 50 per cent greater than lead. A high resistance to the penetration of radioactive rays makes it well fitted for screening from atomic radiation. The metal is also suitable for static and dynamic balancing and for applications requiring maximum weight in minimum space like balance weights on crankshafts, gyroscopes, propellers and centrifugal clutches.

AIR POWER—Compressed air is going to work on an ever increasing scale. It is easily applied to many tasks, the original cost is usually low and the maintenance costs are small. It's being used on vises, chucks and ejectors. It's also working as the power for drill machine feed. One small company feels that the savings accruing from use of air help it in its competition with larger firms. p. 68

OUT OF ROUND—Automatic production of non-circular gears is being achieved through the development of a new machine by Dr. Frederick W. Cunningham, a Connecticut physicist. One of the interesting elements is the use of a moving picture projector and film. Three columns of spots on the film do the work. The film is driven continuously and projected on a row of photo tubes. Each spot actuates one of the three drives. The control system is largely composed of standard components originally developed for use in fire control equipment for the Army and Navy.

DISTORTION—It's still a major problem. Metallurgical advances in both steel chemistry and heat treating technology have gone a long way toward alleviating the situation, but it is still with us. One step was the disproving of the assumption that air-hardening steels are non-distorting. Parts made from air-hardening steels, though acquiring less distortion than the oil or water hardening types, usually demand greater precision. To keep distortion down: Use upset forged raw material, don't stress relieve prior to hardening, mount work properly for soaking, equalize cooling rate on all sides. p. 70

HANGARS AWAY—What is probably the first mobile hangar is located at the Cherry Point Marine Corps Air Station. Getting planes airborne is simplified since the structure can be pulled apart at the flick of a switch and the aircraft can taxi out to the strip without jockeying around. The diamond shaped structure is composed of two 55-ton triangular steel shells mounted on wheels running on tracks. Standard structural components are used to fabricate it.

At each diamond pointed end are workshops equipped with tools and machinery needed for servicing planes. A newer model in the works will be mounted on rubber wheels and be capable of roaming all over the airport at speeds up to 35 miles per hour. It will probably drive visiting pilots to taking the temperance pledge.

EASING THE PINCH—Among conservation measures being adopted to conserve copper is one on a familiar item found around most homes. Worthington Gammon Meter Division of Worthington Corp. is testing 5000 water meter register boxes and covers made of Kralastic instead of bronze. The tough plastic made by Naugatuck Chemical has already shown its ability to take the rough treatment it will get.

ENGINEERED SAVINGS—When they started to plan for their new plant, Atwood Vacuum Machine Co., Rockford, Ill., used a $\frac{1}{4}$ -inch to one foot scale model as a guide . . . and it paid off. Their departments, both office and manufacturing and located according to the "line of production." Tool engineering is adjacent to the tool room, for instance, for easy and immediate contact. As a result of this sort of layout, throughout the plant and some additional handling improvements, they have reduced the distance that material moves 80 per cent. Material handling cost is down about 50 per cent. The scrap handling system is an important factor in the new plant. p. 76

STANDARD PAYMENT—Uniform standards for the selection and payment of architectural and engineering firms for professional services to Army, Navy and Air Force construction agencies were approved by the Munitions Board. Kinds of work for which such professional services are required, include the preparation of plans and specifications for public works and similar technical matters.

mighty MOTORS—Four giant motors to be installed in an Air Force transonic and supersonic wind tunnel are nearing completion at Westinghouse Electric Corp.'s E. Pittsburgh plant. Two of the motors are in a class by themselves each being rated at 83,000 hp, and the two smaller units are rated at 25,000 hp. In addition to the 216,000 hp four motor drive, the rotating machine will have five compressors also being built by the company at Sunnyvale, Calif. The transonic compressor will be a single unit but the supersonic compressor will be made up of four compressors coupled as one. Blades for the compressor measure 2 feet across the face, are 6 feet long and will be mounted on a spindle 18 feet in diameter. They weigh almost two-thirds of a ton each.

SCHEDULE A SLICE Out of Down Time

JOB TICKET

P. O. _____

PART NO. _____

NO. PCS. _____

NAME _____

MACH. CENTER _____

MACH. NO. _____

SPEC. TOOLS _____

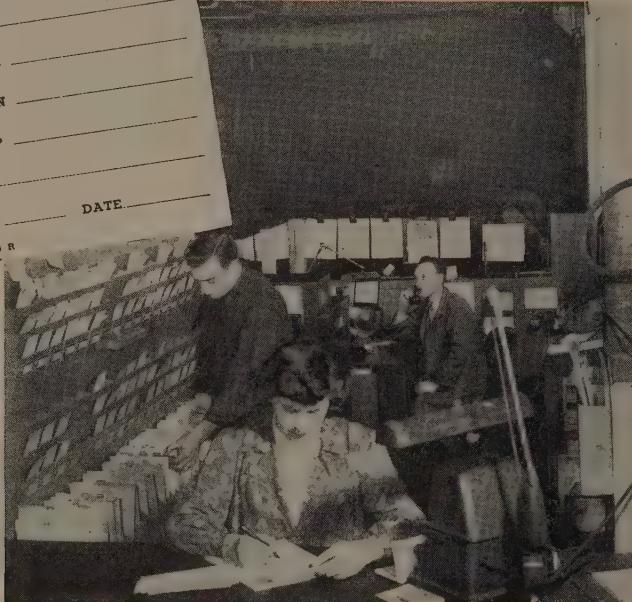
TRUCKED IN _____

TOOLED UP _____

OP. NO. _____

DISP. _____ DATE. _____

W&S NO. 528 R



Dispatcher's booth in the turret lathe department is control center for job traffic. Inset is job ticket for department records

IF YOU'RE interested in increasing the productivity of a machining department, stepping up the efficiency of machine operation is the first and most natural place to start.

It isn't the only factor to consider however. Machines can be producing at a phenomenal rate but if the flow of material into, through and out of the department is not smooth and efficient, department production lags.

Warner & Swasey Co., Cleveland, recently streamlined the flow of material and parts through many of their departments. What happens in the turret lathe department is a good example.

Boosts Output — George Meyer, manager of production scheduling, estimates that a productivity increase of about 25 per cent in this

department can be traced directly to the use of the new system.

Here's how it works.

When the job is trucked into the turret lathe department, a department trucker takes the material to a turret lathe department storage area and locates it according to the machine for which it is intended. This information is on a traveler which goes with the job through its complete shop cycle.

The Sign — If the job is to be run on a 1-A, it is stored in that location. If it is to be run on a No. 4 machine, it is located in that area. Machine locations are spotted by signs on the walls of the storage area.

After the trucker has placed the material in the storage area he drops the traveler in a box at the dispatcher's desk in the turret

When your machine operator takes time between jobs to look for tools and find his new job, valuable machine time goes down the drain. By organizing the flow of jobs and selection of tools you can schedule this downtime to a minimum

lathe department. The dispatcher then files the traveler according to a manufacturing order (MO) number.

Assignment — Next he pulls a route card from the traveler and assigns the job to a machine group by dropping the card in a group box. It is filed in sequence by MO number.

This card moves forward as jobs ahead of it are handled and when it comes to the front it is assigned to a particular machine in its group. At this time the dispatcher puts the job setup card in a "to be tooled" slot for the attention of the tool selector.

Tools Reserved — This setup card describes all the machining operations to be performed and also tells what tools will be used. If any special tools are involved they

is by their serial numbers on card. The selector then takes the setup and white job ticket attached and checks in the tool crib for special tools. These are laid out and marked in reserve for the designated job.

Trucked In—The setup card and job ticket are then returned to the box and put in the "tooled" slot. If all special tools are available a note is made on a "special tools ordered" form and is held in storage area pending availability of these special tools. If special tools are available dispatcher takes off the job ticket and puts it in the trucker's box. The trucker (assigned to turret department) picks up the job from storage area and moves it to location at the assigned machine. He returns the slip so the dispatcher will know the material to the machine.

The tool selector then gets all tools for the job (including special, standard drills, reamers, cutters, etc.) and puts them with the

the Switch—When the operator finishes one job he hails the trucker who has the finished job moved out and the new one moved in. While moving is going on the operator can be setting up for the next since all the tools are with the

There is no need for him to waste valuable machine time for setting down his tools.

Once a job is beside a machine it goes. Only the red tab (rush order) can pass it by.

Glance Survey—Tabs on cards on machine group board in the dispatcher's office tell the status of job. Yellow means the job is in storage area. Green tells that it is tooled and ready to go and red means that the stock has been ordered but not received.

By simply scanning these tabs, the dispatcher or the foreman can readily see the general production conditions in their department. They can readily see that there is a sufficient backlog in any given area to assure a smooth and continuous flow of jobs through the department.

An additional advantage of the system is that it has lessened the need for priority ratings on



Workpieces for turret lathe jobs are on platforms or in boxes for easy trucking. When job is finished the platform is moved out and new job moved in

jobs. Since they are handled by the *MO* number with no unnecessary delay, most jobs are processed through on schedule.

This same system is being used in many of Warner & Swasey's departments. On a plant-wide basis, it accounts for a marked reduction in the number of shortage lots and rush orders.

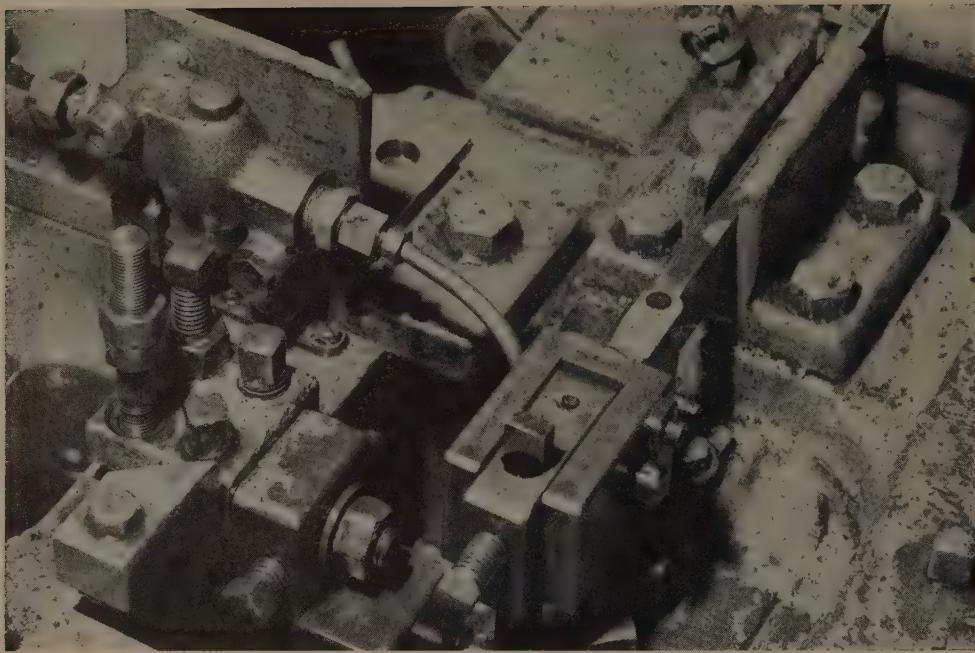
Key to the functioning of the system is in the production scheduling

department. As soon as the *MO* number is assigned, the pattern for any job is set except for such rescheduling as is necessary.

Sequence of operations is known and the completion date can be estimated. After that it's simply a case of the expeditors keeping track of the job in the shop. Any slow-ups are reported immediately to the plant superintendent and the production scheduling department.



View of department shows jobs waiting across the aisle from machines to which they are assigned. Racks are for chuck jaws, bushings and boring bars



Screw header machines at Aero have air jets for ejecting blanks. Air line and valve are seen at the left

Air Keeps Small Plant

In The Running

Pneumatic vises, chucks and ejectors boost production for fastener manufacturer. Versatility and low original cost stimulate use of air power in small plant

ONE important production aid for a small manufacturer in competition with large firms is the great versatility of compressed air power, according to Aero Fastener Corp., Burbank, Calif. It is easily applied to many tasks, usually the means for applying it is inexpensive in original cost with further saving coming from low maintenance cost and uninterrupted operation.

Aero makes screws, rivets and fittings for many of the principal airplane manufacturers and is selling in competition with much larger firms. Its uses for compressed air are few and relatively simple, but they also are an important contribution to low operating costs.

Start with Vises—The company has many small drilling operations. To facilitate this work, air-operated vises have been developed to hold the work so the operator will have a free hand for feeding the machine and will not lose time by manual tightening.

Typical example is the application on drill presses. Instead of having the usual foot pedal for actuating the vise, the act of pulling down the spindle also actuates the vise and releases it as the spindle is raised.

Air Feed, Too—The adoption of air-operated vises was responsible for substantial increases in productivity over the previous manual method. Success from the change

caused the company to further study possibilities for the application of compressed air to the drilling operation, and it has decided to also add air feed to the drilling machines.

While some benefits in time savings are expected, the principal reason for the decision was that a uniform, controlled feed would result in important savings on drilling. Also, while the company's products are similar, they are made in a fairly wide range of metals and the air feed can be adjusted according to metal hardness.

Blows Out Blanks—Another effective application of compressed air is on the company's screw header machines. Every move-

actuates an air valve which a jet to blow out blanks. The any found this simple ejec- method was more positive than anical devices. The installa- cost saving was an extra

cision finishing requiring speed grinding is machine- nished by attachment of an operated grinder in a fixed position on a lathe. Speeds up to 60- rpm are obtained in this way; are much higher than those used with other equipment. The for costly special equipment his purpose has been eliminated.

omatic Chucks—Virtually all work performed by the common lathes and other machine tools on small pieces and short-cuts, which means that loading and unloading accounts for a considerable part of the production time. This cost, however, is cut greatly reduced by equipping all their machines with air chucks.

One piece is out and the next is ready in a fraction of the time required when the operator nished the loading manually. Furthermore, considerable reduction in worker fatigue has been noted since changing over to automatic chucks.

Don't Overlook Savings—D. G. Head, one of the partners in Fastener, believes a small company such as his cannot afford to overlook production short-cuts. He wants to sell to air frame makers, who are buying close out products such as fasteners.

Multiply a small single savings of 25, which is the approximate number of employees at Aero, and does not look so big when compared to multiplication by 250 or more or whatever the number of employees in a larger plant. But he believes that the relative savings have enhanced their competitive position.

It is not possible to make an accurate overall estimate of the savings resulting at the Burbank plant, but an approach to estimating the benefits gained is found in the fact that a 25 per cent increase in productivity was the estimate given in connection with most of the individual compressed air applications described.



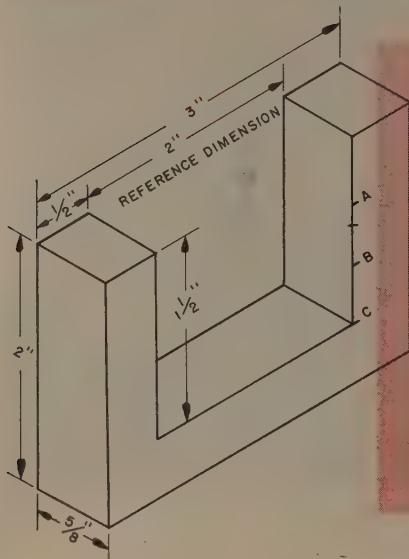
Air chucks on all machine tools cut down loading time, reduce worker fatigue and add greatly to daily output



Vise on this drill press is actuated by the advance movement of spindle and is released as it withdraws

DISTORTION

It Can Be Minimized in Heat Treating



It's still a major problem facing the tool and die maker, even with air-hardening grades of steel and good controlled-atmosphere furnaces. Solution is nearer

By A. L. PRANSES
Supervising Engineer
Westinghouse Electric Corp.
Lima, O.

Fig. 1 — U-shaped sample evaluates effect of residual stresses. A, B and C indicate the machining steps

METALLURGICAL advances in both steel chemistry and heat treating technology during the last several decades have gone a long way toward alleviating the problem of distortion in heat treating. Even with the use of the latest air-hardened steels and the finest controlled-atmosphere furnaces, distortion remains a major problem.

An extensive study was made of the heat treating distortion encountered in the manufacture of molds for industrial plastics. All these molds were made from SAE 3335 steel modified by the addition of 0.20 per cent molybdenum to make it air-hardening.

Prove False Assumption — The results, considered analogous to those encountered with any air-hardening steel, proved false the assumption that air-hardening steels are nondistorting. Parts made from air-hardening steels, though acquiring less distortion than the oil or water hardening types, usually demand greater precision.

The study established that distortion during heat treatment results from four different changes taking place in the metal singly or in conjunction with each other.

These are: Bending creep, residual stresses, anisotropic growth and differential transformation.

Bending Creep — People working with metals realize that their strength drops with increasing temperature, yet many fail to realize that the yield strength of most steels is virtually zero at the soaking temperatures used prior to quenching. The result is that expensive dies are often loaded directly on a cracked furnace floor or thoughtlessly placed in trays having warped bottoms.

In other instances, the heat treater may place supports under the die but give little or no consideration to its geometry. In either case, the die is likely to permanently sag under its own weight by flowing plastically in bending creep.

Tests Prove It — Four simple samples, $1/2 \times 2 \times 10$ inches and made of modified SAE 3335 steel, were placed flat on bar supports 9 inches apart. One sample was left unloaded, while the other three were loaded with various weights at the center of the span. The samples were then charged into a protective atmosphere furnace at 1650° F (the normal austenitizing temperature for this steel), held

for $1\frac{1}{2}$ hours, then furnace-cooled to avoid any distortion that might be caused by hardening.

The deviation from flatness was then taken as a measure of distortion due to bending creep. Figure 2 shows this distortion as a function of calculated extreme bending stress. Even a very small stress such as 36 psi on a steel having a nominal yield strength of 9000 psi at room temperature, will reduce the enormous creep of 0.26 inch in the normal heat-treating cycle. Other steels will react differently, but only in degree. In any case, the result will be highly objectionable.

A bit of mathematics will show that the amount of creep is proportional to the square of the length of the unsupported span divided by the height of the beam. Therefore, reducing the free span (by adding intermediate supports) will greatly reduce the creep. Increasing the vertical section (running the bar on edge instead of flat) will have the same effect but to a lesser degree. Table I shows the results of mounting, in various positions, a conventional mold side plate 4×10 inches.

Residual Stresses — Much infor-

has been attached to the effect of residual stresses on the distortion encountered during heat treatment. Doubtless, the opening of bent or deep-drawn objects exposed to heat have exaggerated the problem.

As a result, it is common practice to apply a stress-relief anneal at the subcritical level (750 to 1300° F.) after rough machining and before finish machining and hardening. At these lower temperatures, however, stresses are present and tend to dissipate themselves through the process of localized plastic flow.

Evaluate Tool Stock—In the case of tools and dies, however, annealed (stress relieved) stock normally is the raw material, and the stresses in the work at the time it is ready for hardening are induced by machining operations. To evaluate the effect of residual stresses, the U-shaped sample shown in Fig. 1 was used.

Some samples, all machining done at one shaping operation, the sample was hardened directly. At the other extreme, metal was removed in three easy steps, each followed by a stress-relief anneal; then the samples were hardened. Schedules intermediate between these extremes also evaluated.

Stress Relieving Risks—All samples were cut with the same relation to the rolling direction in the material; and all received their hardening at the same time. Change in dimension across the width of the sample was recorded as distortion. The results are listed in Table II.

The conclusion, based on this, is that there is little merit in relieving tools and dies made of annealed stock at any stage prior to hardening providing the residual stresses are those induced by the removal of metal by machining. In fact, there may be a measure of risk in so doing.

Anisotropic Growth—Steel hardens by transforming from the austenite phase to the martensite phase. The transformation is accompanied by a net increase in volume that is unavoidable if hardening is desired. If this growth is the same in all directions, it

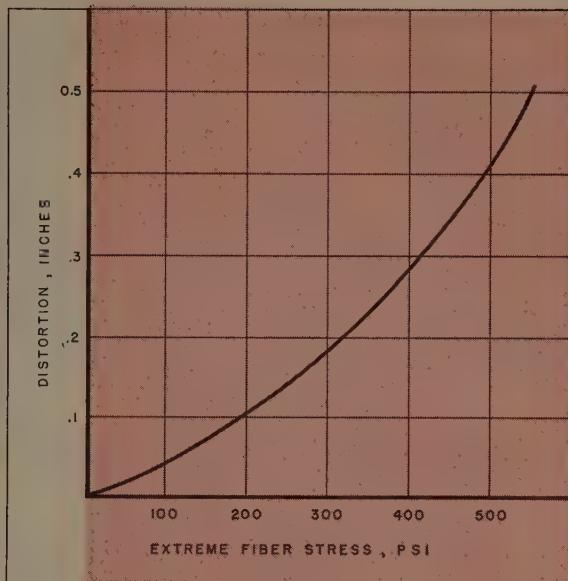


Fig. 2—Curve shows distortion due to bending creep as a function of the calculated extreme fiber stress

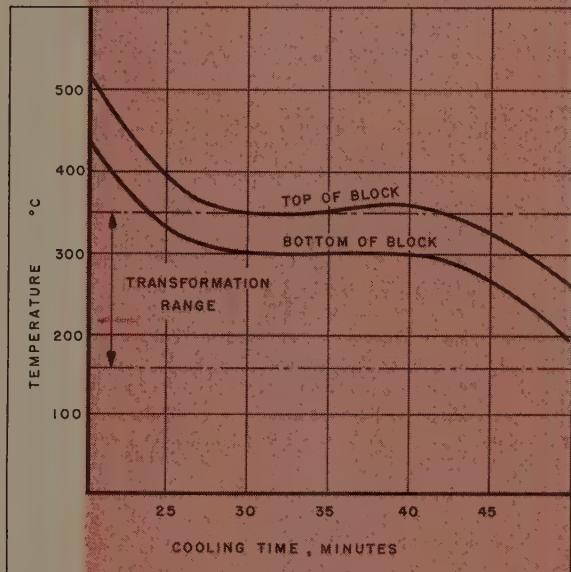


Fig. 3—Cooling curves show that bottom and top surfaces of steel block on floor of atmosphere-controlled furnace begin to transform at different times, thereby introducing distortion through differential transformation

TABLE I

Mounting Method	Calculated Stress, psi	Creep in.
Flat, supports at each end	23.1	0.016
Flat, three evenly spaced supports	1.8	0.001
On edge, supports at each end	4.3	0.003
On edge, three evenly spaced supports	0.3	0.0002

TABLE II

Average change during hardening as a function of the number of prior stress relief anneals.

None	0.0010"	No metal	0.0025"
One stress relief	0.0025"	0.625 cu. in.	0.0025"
Two stress reliefs	0.0030"	1.250 cu. in.	0.0035"
Three stress reliefs	0.0025"	1.875 cu. in.	0.0010"

would be objectionable but allowances might be made for it in simple dies.

Not Affected by Size—To evaluate this characteristic in our modified SAE 3335 steel, several sample blocks were prepared, half of them $1 \times 1\frac{1}{2} \times 2$ inches and the other half $2 \times 2\frac{1}{2} \times 3\frac{3}{4}$ inches. In each group, the 2-inch dimension was parallel to the rolling direction.

By cutting the blocks so that the longest dimension in the first case and the smallest in the second were parallel to the rolling direction the effect of size was taken into consideration. Growth resulting from heat treatment is shown in Table III. It was not appreciably affected by the size of the block.

Carbide Banding Seen—Annealing after heat treating plus rehardening, although repeated several times on the same blocks, still produced the same amount of growth. This tends to verify the theory that anisotropic growth is associated with carbide banding, which does not appreciably react to thermal treatment.

Since the growth is five times as great in one direction as in another, it is obviously impractical to make allowance for it in machining the die. The only solution lies in upset forging of the die stock where extreme precision is required or where hand finishing after heat treating proves too costly.

Differential Transformation—As explained in the preceding section, expansion accompanies hardening of steels. It is also a known fact that, under given conditions, the

formation of martensite (and the expansion) occurs during cooling over a definite temperature range.

If, during quenching, one side of a die cools much faster than the opposite side, the cool side will expand first and bow the die away from the cooling direction. When the opposite side reaches the transformation range, it will be unable to compensate for the previous bowing since the first side is already hard and strong.

Bottom Transforms Early—Fig. 3 shows a portion of the cooling curves obtained with a block of steel $2\frac{1}{2} \times 3 \times 6$ inches resting directly on the floor of a water-jacketed, atmosphere-protected cooling chamber. The bottom curve is taken from a thermocouple placed on the side of the block resting on the cooling surface. The top curve represents the readings at the top of the block only $2\frac{1}{2}$ inches away. The bottom surface begins to transform 7 minutes before the top, so it is not surprising that distortion occurs.

The severity of this distortion was tested by preparing a number of samples $\frac{1}{2} \times 2 \times 10$ inches from SAE 3335 steel, mounting them in both flat and edgewise positions with different types of mounting, and hardening them by quenching in the water-jacketed cooling chamber of the Westinghouse Ammogas furnace. The deviation from flatness in a plane parallel to the chamber floor was taken as the measure of distortion. Test results are tabulated in Table IV.

Two conclusions are apparent:

TABLE III

Direction	Average Growth, inches/inch
In the rolling direction	0.00045
Parallel to axes of rolls	0.0002
Parallel to line connecting axes of rolls	0.0010

TABLE IV

Method of Mounting	Average Dis-
	tion, inch
Flat on bare wire tray	0.0350
Flat on half-inch steel plate	0.0175
Flat on asbestos sheet	0.0200
Flat on three equally-spaced half-inch bars	0.0160
On edge on bare wire tray	0.0070
On edge on half-inch steel plate	0.0035
On edge on asbestos sheet	0.0015
On edge on three equally-spaced half-inch bars	0.0005

Even the slightest separation between work and cooling surface drastically reduces distortion; a providing a larger mechanical action to oppose the bending reducing distortion.

Tips for Heat Treaters—

1. For greatest control, the material should be uniformly forged to homogenize the banded structure, then be fully annealed.
2. Stress relieving at any stage prior to hardening is not warranted and may be actually harmful if only the residual stresses induced by machining are present.
3. Proper mounting of work during austenitizing (soaking) is critical if bending creep is to be avoided. The best method appears to be the use of a number of small bars spaced irregularly to the geometry of the piece to provide evenly-distributed support. The supports themselves must be made of materials not likely to sag at high temperatures.
4. When quenching every effort must be made to equalize the cooling rate on all sides of the work.
 - a. Pieces quenched in still air should be suspended freely. A metallic support will accelerate cooling, and a non-metallic support may initiate and retard cooling.
 - b. Pieces quenched in an air blast should be spun to equalize the blast effect.
 - c. Pieces quenched in a protective-atmosphere cooling chamber should be mounted equidistant from all cooling surfaces. If this is not possible, then the greatest deviation of the die should be placed normal to the nearest cooling surface.

MEET THE

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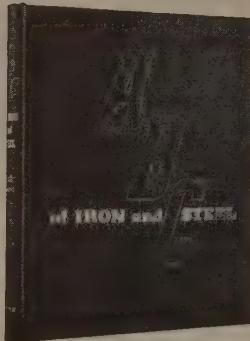
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Peeling Problem Blasted

BLAST CLEANING heads off paint peeling on parts used by Vapor Heating Co. Inc., Chicago, for railroad passenger car heating equipment. The peeling problem is eliminated for such components as those that make up steam generators, blowers and radiators.

In addition, the firm says its 8-foot diameter Pangborn Rotoblast table-room makes cleaning a faster operation and simplifies handling. Result is a substantial reduction in manhours. Extent of timesaving is



**FAST, SMOOTH PARTS CLEANING
... good bond prevents paint peel**

estimated by the company at 10 manhours from production of each heating unit.

Make Ready — For each steam generator produced, about 25 parts are made ready for painting by the blast cleaner. The operation must remove weld slag, shop dirt, mill scale and rust to provide a good paint bonding surface.

Typical parts cleaned include large generator control cabinets, blower housings and welded steel coils. Cleaning time approximates 30 seconds for small, thin pieces; 3 minutes for harder-to-clean parts; and 5 minutes for the heat exchanger coils.

Two Coats — These hot and cold-rolled steel parts are painted twice — once before assembly, once after — by a special silicone paint. The company says blast cleaned parts have a sufficiently smooth finish to make a gray first coat of paint al-

most undistinguishable from painted spots for touch-up work. To assure two thorough coats of protective paint, the first coat is now tan, the second gray.

Machine Design Meeting Feb. 1

Because there is a grave danger that specialization in engineering is being overemphasized, the 11th annual machine design conference will get back to fundamentals with all-day sessions on scientific methods in engineering at the Cleveland Engineering Society, Feb. 2.

Seven of the nation's top authorities in technical methodology will cover the various phases and endeavor to develop an engineering shorthand of basic techniques which will enable others to determine the proper approach to today-to-day problems.

Discussion will include specific methods to apply dynamic symmetry, research and development, design of special machinery; and the use of models, samples and plant operation. Following each talk there will be a separate session at which interested conference may direct specific questions to the speaker.

Truck Handles Emergencies

Going into emergency service in the city of Cleveland is a newly signed crash truck of giant proportions. According to its builders, White Motor Co., Cleveland, the truck does everything but think when it goes out on an emergency call. It is an all-purpose disaster unit equipped to meet any emergency requirement.

Primarily a tow truck for extra heavy towing jobs, it can handle dead weight up to 60 tons. With its two big booms that cover a radius of 170 degrees, and its 30,000 pounds gross weight, it has power to pull down walls, pick up overturned tractor trailers or roll freight cars. If an overturned trailer blocks traffic, the truck can lift it back on its wheels and roll it away on a fifth wheel attachment which makes it a trailer.

It is equipped with acetylene cutting torches, hydraulic push-pull equipment of giant size, block and tackle, two-way radio, fire fighting and first aid equipment. It is powered by a 200-hp diesel engine.

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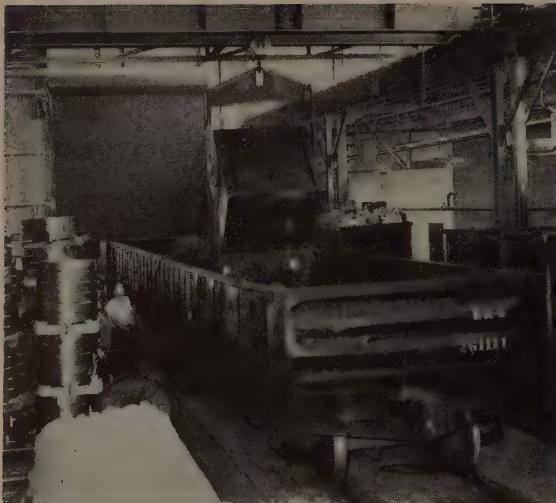
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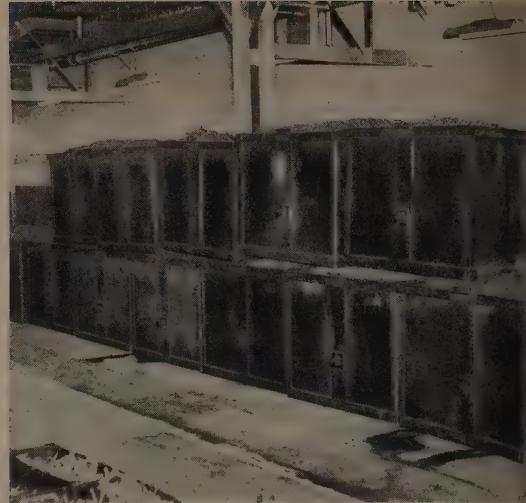
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It takes eight of these bucketfuls of scrap to fill a railroad flatcar. After buckets have been dumped they right themselves. Dump latch is tripped by floor man



When buckets in the pit are full they are lifted and stacked against the wall near the inside railroad spur. Buckets hold an average of 8000 pounds of scrap

SCRAP: By the Bucketful

This company's answer to the scrap handling problem came with a system of its own design. Large buckets set in a pit cut handling cost to a minimum

HOW WOULD you like to load a railroad car full of scrap in just 35 minutes? This company does it with just two men on the job—the crane man and a man on the floor.

Faced with the common problem of getting an increasing amount of scrap out of their plant, Atwood Vacuum Machine Co., Rockford, Ill., looked for a completely new system. The one they finally adopted is one they developed.

No Strain—First they designed and built some buckets which hold about 8000 pounds of steel scrap each. Then, in their new plant, they built pits in the floor which hold these buckets and which bring the top lip of the buckets about flush with the floor.

Fork lift and hand trucks thus dump scrap right into the buckets. There's no lifting or shoveling. Scrap is segregated as it's put in the buckets.

Short Haul—Since most of their scrap is generated in the first operation, it is transported a relatively short distance to shearing equipment for dumping into the pits.

As the buckets become full they are lifted out and empties are put in their places. Buckets are easily handled with a yoke on the overhead crane.

Self-Righting—After they're lifted from the pits the buckets are stacked along the inside railroad spur so they are readily available for dumping into flat cars.

The same yoke on the overhead crane hoists the buckets over the cars. The floor man, who works with the crane, pulls a rope and trips a latch which allows the bucket to upset and dump. The buckets are designed so after they have been dumped they will right themselves.



Shears in the background cut up scrap before it's dumped into the flat car. Scrap is segregated before it's dumped. With the buckets in the pit there's no need for lifting or shoveling.

KEEP THESE COSTS

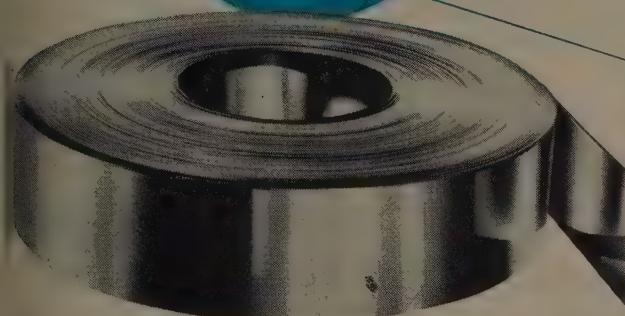
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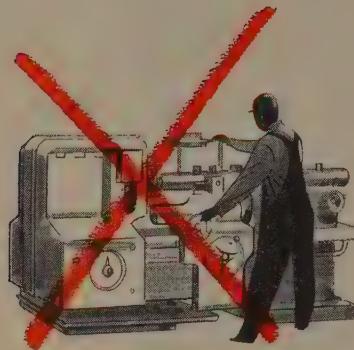
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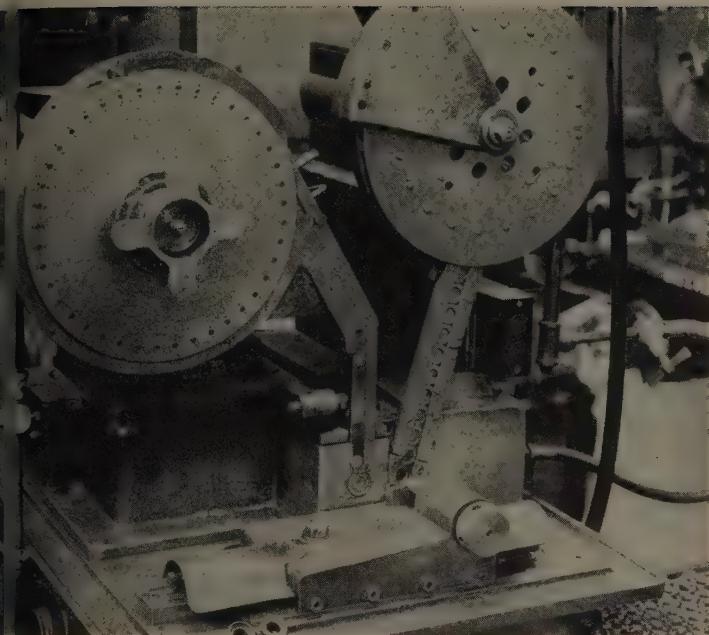
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machine automatically assembles the needles and dust caps to bearing. The bearings also are filled with grease before being removed from machine. Hopper at left is for needles, the one at right for dust caps

opper Feeds Needles to Bearings

Replacing a tedious hand-assembly operation with a semi-automatic machine steps up the production of needle bearings. Grease is added in the same operation

LE BEARINGS are often made with components separate from the outer race. This is true, in the case of bearings employed in large quantities in universal joints built by Mechanics Universal Joint Division, Borg-Warner Corp., at its plant, Wood, Ill., plant.

One time this assembly was entirely by hand. It proved tedious a job for the engineers in the mass-production plant, however, and in co-operation with Berg-Jacobson Mfg. Co., Rockford, they developed a machine to do the job. Several of these machines are now kept busy regularly, work so well that the latter company obtained a license to build for general sale.

at It Is — The machine installs a pair of rotating hoppers. One feeds its own magazine, one for cylindrical needles and the other for stamped dust caps. Mag-

azine

azines carry these components into recesses where they come into line with a plunger mounted on a carriage arranged on table ways for transverse motion.

Outer races are supplied separately. No inner races are used since the rollers bear directly on the hardened stub shaft when applied to a universal joint. Before needles are placed in an outer race, they feed down the magazine by gravity and with their axes horizontal. Just below the end of the magazine is a retractable horizontal shaft with a diameter the same as that of the shaft on which the bearing is to be used. This shaft is centered in an annular recess in the outer wall of which is a retractable tube with a slot at the top to admit the needles.

Nineteen Per—Needles feed into this annulus by gravity until it is

completely filled, usually with 19 needles. While this recess is filling, the machine operator loads a race over a shoulder on the carriage plunger.

When the annulus is filled, the operator runs his thumb across the needle ends so they are flush. Then he presses a pedal and the plunger is advanced. This pushes the race into a recess, as the tube around the needles retracts against a spring and the end of the plunger, which is the same size as the shaft, causes the shaft also to retract against a spring. Thus, the race is pushed over the needles and the shaft inside the needles.

Almost Finished—When the operator's foot releases the pedal, the plunger is retracted and the needle and race assembly are withdrawn with the plunger on whose stub end the assembly is supported. It now remains only to apply a dust cap and grease to make the bearing ready for use.

These are applied after the carriage is shifted to the right where the plunger and partly-assembled bearing are brought into line with the second recess, that below the second magazine.

Adds the Cap—In this position, the plunger is advanced to insert the assembly in the recess. There the assembly remains when the plunger is withdrawn. As it is withdrawn, a dust cap drops from the magazine and centers itself in the recess so its boss is in line with the hole in the race. When this occurs a rear plunger is automatically advanced and presses the bearing forward over the dust cap boss, which is a press fit in the race hole.

This motion results in fastening the dust cap permanently in the hole. Excluding dust and other foreign matter, it also serves to retain grease. The grease is injected automatically through a port that is opened momentarily as the rear plunger reaches the end of its stroke.

One Shot—Actually, a supply of grease is kept under continuous pressure but can feed into the bearing only during the short interval when the port remains open. In effect, the port acts to meter the supply, so each bearing receives the same amount.

After the dust cap and grease

New Metal Finishes FOR COILED OR SHEET STRIP!

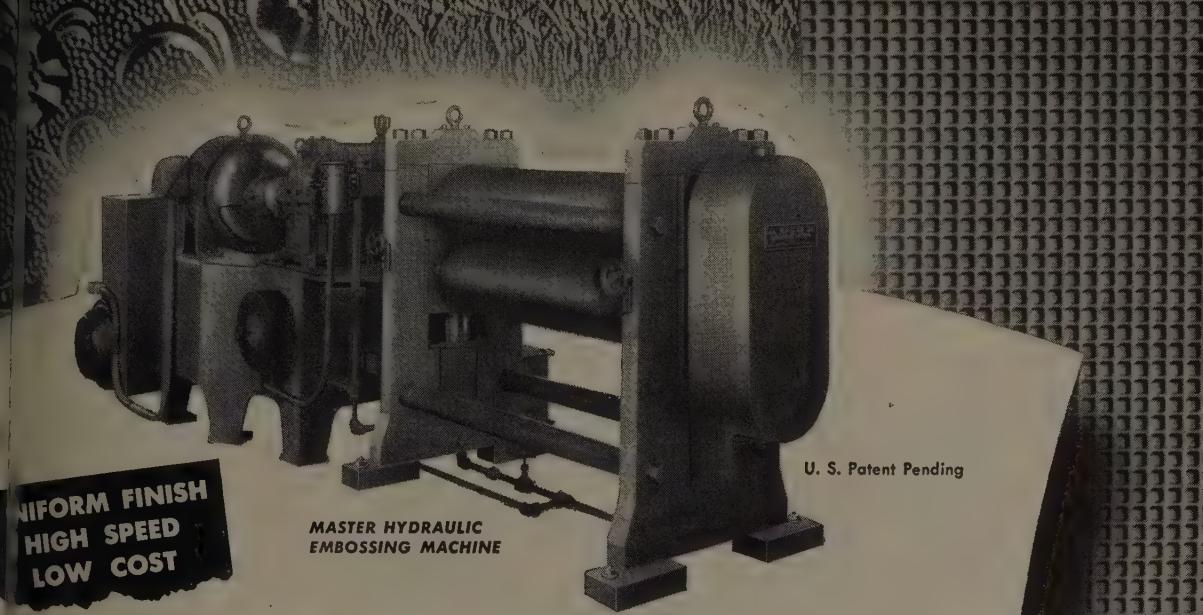
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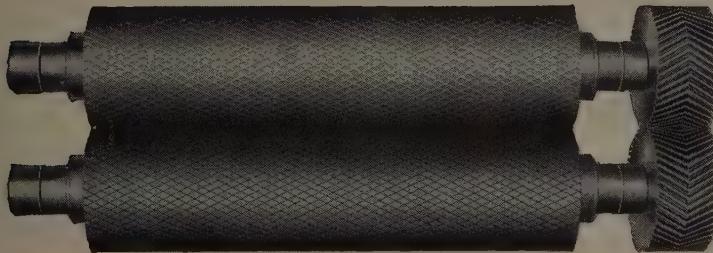
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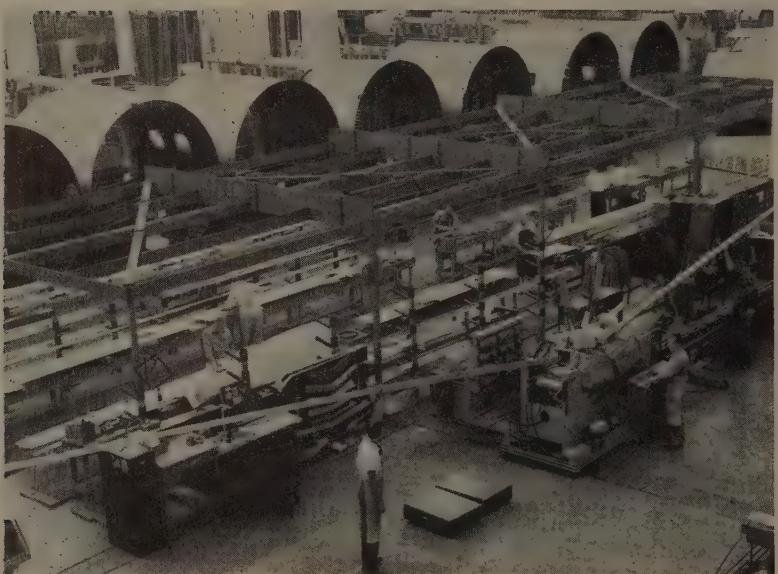
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are applied, the bearing assembly is completed, is released and is pushed out of the recess. Then it's placed by hand in a tote box.

Machine operates on a semiautomatic basis. Loading of parts in hoppers and of bearing races and removal of the completed assembly are hand operations. Motions of the carriage and its plunger are by

foot. Other operations are automatic. Their timing is controlled by the motions of the carriage and its plunger.

As filling from magazines is much faster than hand filling, the setup saves considerable time. This is especially true as grease is also automatically injected and no separate filling is required.



Wing beam caps, made of high-strength aluminum alloy, are shaped on special bender developed for Lockheed. Machine can handle pieces 60 feet long, producing as much as a 50-degree bend in a 5 x 3 1/2-inch beam easily and accurately

Wing Beam Bending Job Cut to 3 Minutes

Two Hufford-built machines are making fast work of a bending job that formerly took 30 minutes. The machine applies heat up to 325°F at the point of bend

BENDING jobs on high strength aluminum alloy that formerly required 30 minutes are being finished in 3 with a special beam bending machine developed by Lockheed Aircraft Corp. A second advantage credited to the machine is greater bending accuracy. In addition, it requires no special operating skill.

Primary application is found in bending wing beams, but the new machine's capabilities extend to other beam types. It can bend a 5 x 3 1/2-inch 75ST aluminum member up to 50 degrees at 325°F. A

rotational control can be adjusted so springback does not warp the bent part out of proper plane.

Only two of the Lockheed-designed machines are in existence, both built by Hufford Machine Works Inc. One unit is installed at Beech Aircraft Co.'s Wichita, Kans., plant for work on Lockheed parts; the second is in operation at Lockheed's Burbank, Calif., plant.

Hot Bending Required—Until the new method was developed, beam caps and other extrusions were bent by blocks and dies. Advent of

75ST material required hot bending, making previous methods impractical. The aircraft manufacturer says its machine's design provides for complete control of the process, including the forming angle, work temperature and temperature of bending dies and springback.

They report only inexpensive inserts need be changed for different shape. The machine's self-contained hydraulic operating power. Its integral heater plates are regulated automatically for temperature.

Temperature Measurement—Because the amount of springback obtained reflects a difference of plus or minus 2°F, provisions are made to measure temperature of the part while it is clamped in the machine. An equalizer makes jaw operation symmetrical when bending. In addition, there are adjustable centers of motion for each axis plus automatic, adjustable stops for controlling amount of bend.

Another provision makes it possible to rotate the jaws around the beam center line. In this dihedral and sweepback angles can be proportioned properly with allowance made for springback in both planes. Bend angle can be checked quickly during the try by opening the clamps and using a template while the part is still in the machine.

The machine can pull back to correct a beam inadvertently overbent during initial adjustment. It can also remove twist warps which sometimes occurs in clinched or extruded parts.

Dimensions—Bending speed is adjustable and all functions are controlled by pushbuttons on a control stand. The machine is 10 inches wide, about 92 inches high and 100 inches long. Center line of the beam floor level is 50 3/4 inches.

Rack-Type Plating Illustrated

Automatic rack-type plating equipment made by Frederick Stevens Inc. is described and illustrated in a bulletin prepared by the company. The folder also illustrates many special applications these machines are capable of handling. Copies of bulletin No. 61 are available free from the company, Detroit 16.

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New Vistas Opened for Metals

Warm working at temperatures of 300 to 650°F affords control of texture and improvement of physicals with and across the grain of flat material

By NORMAN P. GOSS

Consultant
Cleveland

TEMPERATURE at which a metal is deformed as by rolling, drawing, etc., profoundly effects the orientation texture. When metals are deformed at room temperature, the operation is referred to as cold working; when carried out in the range of 300 to 650°F, it is referred to as warm working. X-ray diffraction studies made on low-carbon strip steels, rolled over a wide range of temperatures, showed that the orientation textures were temperature sensitive. When low-carbon strip steel was deformed or "warm rolled" at 400 to 500°F, a nearly random orientation of the grain fragments resulted.

Within this temperature range, two orientation textures exist simultaneously, and the transition from one orientation texture to the other while the metal is being deformed produces the random-like structure. Where low-carbon strip steel was rolled at 700°F, a new orientation texture was found. This has been called the "warm rolling" texture to distinguish it from the well known cold rolling orientation texture formed at room temperature.

Leads To New Textures—This discovery opens up new possibilities in the field of plastic deformation of metals, i.e. the warm working technique. It is well known that different slip systems operate at different temperatures, and this is true for nearly all metals. By controlling the rolling temperature, one can develop in the metal a wide range of orientation intensity textures; or if required a texture which is subsequently a random one.

This new warm rolling technique can be applied to many of the non-ferrous metals which do not have an allotropic transformation to counteract the effects of orienta-

tion when such metals are subjected to drastic deformations without intermediate heat treatments.

By taking advantage of the orientation textures, which can be developed at various temperatures, one can control the intensity of the preferred orientation. Or if desired a random orientation can be developed by taking advantage of the different orientation textures which develop over the warm rolling range.

Another important fact revealed by these experiments on the warm rolling of metals, was the tremendous increase in the intensity of the preferred orientation when the low-carbon steel was rolled below room temperature. The lower the room temperature the more perfect the orientation texture.

Affords Control—The recrystallization texture of metals can now be controlled by taking advantage of the "warm working" method. This will be especially important in deep drawing operations in which plastic flow is not the same in all directions.

In the case of tin plate and auto-body strip steel, etc., it will now be possible to control the orientation texture so that the physicals with and across the grain will be improved, and controlled. Controlled warm rolling of 18-8 steel will result in less gamma iron being transformed during the rolling or wire drawing operation. Bolt wire, cold heading stock, also can be improved by warm drawing techniques.

Lehigh To Get Largest Tester

Plans for the building to house one of the world's largest vertical universal testing machines at Lehigh University were announced recently at a technical meeting of the Iron and Steel Institute in Philadelphia.

Total cost of new equipment and building, expected to be ready for

the opening of the academic year starting September 1954, is estimated at \$1.2 million. The seven-story brick building will be 130 feet long, 70 feet wide. An 18-foot, 20 x 30 feet, will be located in the middle area under the laboratory. A 4-foot reinforced concrete slab will extend over most of the floor area to support long girders.

In addition to housing the 5,000-pound capacity hydraulic tension-compression machine, to be constructed at an estimated cost of \$400,000, the building will house five laboratories, a library, conference room, two seminar rooms, an elevator, and 21 offices.

Heavy Press Work Flourishes

Five hydraulic die-forging and extrusion presses are under design and construction by United Engineering & Foundry Co., Pittsburgh, as a part of the Air Force heavy press expansion program. The firm reports it is building 110,000 tons or slightly more than 25 per cent of the 400,000 tons' capacity comprising the program.

United's part consists of two 3,000-ton and one 8,000-ton forging press, one 12,000-ton and one 20,000-ton extrusion press. The company says the latter, with overall length of 290 feet will be the largest press of its kind in the world.

The eight-column, 35,000-ton forging presses will be 71 feet high—51 feet above floor level—and weigh 10 million pounds each, plus 3 million pounds of auxiliary equipment. Castings weighing 450,000 pounds will be required in the construction and 200,000-pound forgings will form each column of the press.

New Surface Preparation Specification

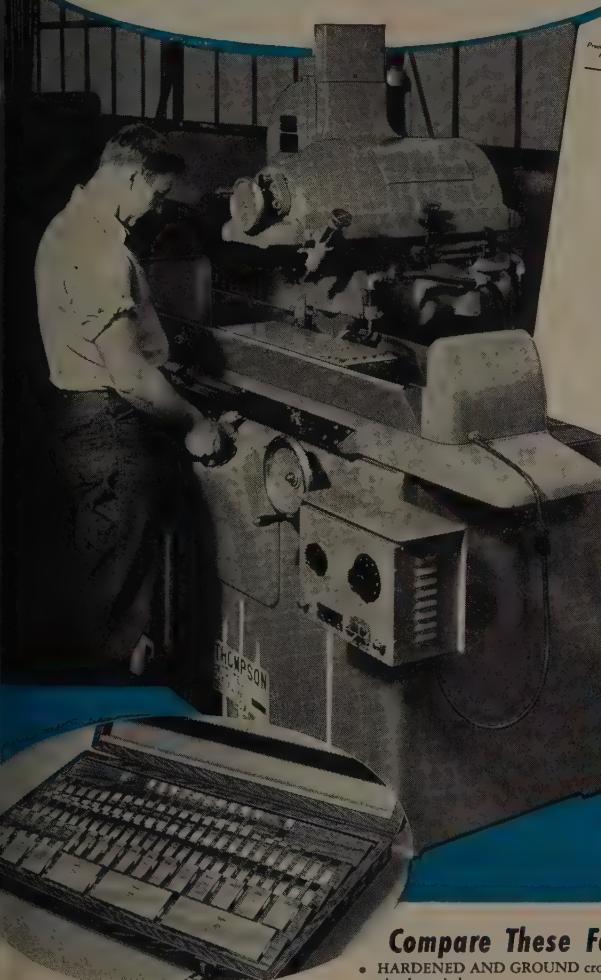
Series of nine surface preparation specifications has been issued by Steel Structures Painting Council, Pittsburgh. The new specifications cover solvent, hand and power cleaning; flame cleaning; new steel blast cleaning to white metal; commercial blast cleaning; brush-blast cleaning; pickling; and weathering and cleaning.

The entire series can be obtained for \$1 from the council, 4400 Pittsburgh 13.

Here's Proof

The New Thompson Type 2F is a **SUPER PRECISION**

Tool Room Grinder



When working to a tolerance of four mils of an inch such as is observed when making Webber Gage Blocks, the rough or preliminary grinding plays an important role in keeping cost of the final finishing within reasonable limits.

Precision Gage Blocks, Angle Gage Blocks
Heavy Duty Gage Blocks Combined



WEBBER GAGE COMPANY
12900 TRISKETT ROAD - CLEVELAND 11, OHIO

November 10, 1950

Mr. Wilson, Vice President
Thompson Grinder Company
Springfield, Ohio

Dear Mr. Wilson:

We recently installed a new THOMPSON Tool Room Grinder to grind Gage Blocks to our specifications and tolerances. The results have been very satisfactory, in spite of the close limits to which the work has to be done. We thought you would be interested in the performance of this machine.

Very truly yours,

WEBBER GAGE COMPANY
George D. Webber
George D. Webber

Thompson 2F Grinder Photo-
graphed In the Webber Gage Co.,
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COMPARE THIS NEW **8 x 10 x 24** TOOL ROOM GRINDER

Compare These Features:

- HARDENED AND GROUND cross slide ways completely sealed.
- One shot lubrication to cross slide ways and internal saddle bearings.
- HARDENED AND GROUND sealed anti-friction vertical slide.
- HARDENED AND GROUND BED WAYS with automatic lubrication.
- 3600/1800 R.P.M. 2 speed wheel head. Heavy alloy steel spindle heat treated, runs in super precision ball bearings accurately preloaded, lifetime lubricated.

Handy control panel.

- Elevation micrometer stop graduated in .0001".
- GROUND THREAD FEED SCREW.
- Automatic wheel TRUING device.
- Longitudinal hand wheel with automatic engagement.
- Hydraulic head movement throttle with rapid traverse.
- Hydraulic table movement throttle.
- Elevating hand wheel graduated in .0005".
- GROUND THREAD FEED SCREW.

WRITE TODAY for complete specifications and performance data. Address Dept. 10, Thompson Grinder Co., Springfield, Ohio.

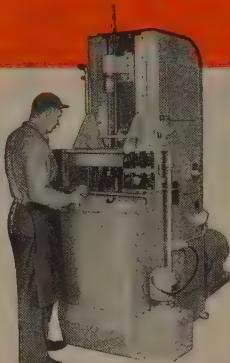
The only manufacturer of a complete range of heavy duty and light duty surface and contour grinders for industry.

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SURFACE
Grinders

The Thompson Grinder Company, Springfield, Ohio

three steps
to lower broaching costs
the *American way*

1



AN *American* MACHINE

American engineers design and build more than 50 models for surface and internal broaching. One of these standard models is probably the right model to speed your production, and lower your broaching costs. However, if yours is a special broaching problem, American can build you a special machine to beat that problem. Production bottlenecks are easily solved by American experience.

2



AN *American* BROACH

American broaches are designed with the same skill used on American machines. We know the demands placed on broaching tools by machines and we build accuracy and durability into every American tool. They maintain closer tolerances, and last longer because they are built the American Way.

3



AN *American* FIXTURE

Excessive handling of the part being broached costs you money. To get the most from your machine and your broaching tools you need a fixture to properly hold and handle the part during the broaching operation. Because American builds all three — machines, broaches, and fixtures — we have the know-how to get the most from every fixture, every tool, every machine.

WANT TO KNOW MORE ABOUT THE AMERICAN WAY OF LOWERING BROACHING COSTS

Send for American Broach Catalog #450, 32 pages of useful information on American products that solve broaching needs. Or if you have a special broaching problem in your plant, just send a part print or sample and hourly requirements for our engineers' specific answer. Address Dept. S. No obligation of course.



American BROACH & MACHINE CO.
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Seam Welding: 100 ipm

Air Reduction Co.'s Aircomatic welding head is used here by S. J. Tol Co., Philadelphia, to weld 100 ipm. The 3/32-inch diameter wire is supplied from a mechanical wire feed unit. Because shielding gas affords sufficient protection, no need for flux is required.

Attachments Expand Truck Use

Increasing efficiency of power industrial trucks is the theme of booklet offered by Elwell-Park Electric Co., Cleveland. According to the manufacturer, use of various specially-designed attachments enables one truck to do the job of many, increasing economy of operation and broadening applications.

More than 25 attachments are illustrated and described. Each is pictured and accompanied by detailed text of design and applications. Booklet is designed for quick, easy reference by plant engineers, production personnel, supervisors and purchasing agents.

Machine Drills Tank Housing

Special machine for drilling and reaming tank suspension support housings has been developed by Cross Co., Detroit. Housing is made of cast armor material with Rockwell hardness C42.

The machine drills 4-inch diameter holes at a rate of 11 pieces per hour. Parts are held on a motor-driven index table with three stations. First station is designed for loading and unloading, the second for drilling, the third for



Clear Hook Clearance

monorail-type crane with 10-ton t-carrier mounted between the two gages offers considerable extra clearance for profitable use of large area. A development of American Monorail Co., Cleveland, the crane has another advantage in possible long-span application. Suspend pushbutton station exerts control

from drilling, the fourth for stamping. One unskilled operator required.

Contribution to reduced downtime is use of preset tools to permit quick replacement. Hydraulic and electrical construction is made to S. C. standards. Other features include hardened and ground ways, hydraulic feed and rapid traverse, and automatic gravity-operated clamping for the index table.

Machine Line Described

Specifications for its line of high-speed automatic dieing machines, including features essential for production of stampings by the progressive die method, are available in a 60-page brochure from Henry Wright Division, Emhart Mfg. Co., Hartford, Conn. Machines covered range from 25 to 400 tons capacity.

Various production stages—from raw stock to finished part—are illustrated for 25 typical parts. Related and accessory equipment, including special automatic steel presses and single and double crank straightening types and steel knuckle joint presses are also described. The brochure can be obtained free by request on company letterhead.

KENNAMATIC
STYLE SBL-A

Sure Cure for a CUTTING HEADACHE

If you have a cutting headache, caused by tool failure, take this three-way cure:

- (1) Use Kennametal cemented carbide . . .
- (2) in tooling designed by our engineers who know carbides from the ground floor up . . .
- (3) applied with the help of our field engineers whose aggregate experience is greater than that of any other carbide tool manufacturer.

This cure is working in thousands of shops—handling jobs which no other tools can do. But, even if you don't have a cutting headache, consider this important point:

Tooling that takes tough jobs in stride is the kind to use, also, on routine jobs where floor-to-floor time and overall cost-per-piece must be determined with accuracy, and maintained.

That tooling is Kennametal. Let us prove it in your shop. Kennametal Inc., Latrobe, Pa.

KENNAMETAL
CEMENTED CARBIDE TOOLING
THAT INCREASES PRODUCTIVITY



Bearings greased with lithium base grease have functioned in this pinch roll with as much as 51 per cent water when the seal was accidentally broken

Better Lubrication Boosts Production

Lithium base grease used on almost half of lubrication points in hot strip mill. High water tolerance provides safety factor where there is an unusual water hazard

By A. D. BINZ
Chief Lubrication Engineer
Hot Strip Mill Division
Pittsburgh Works
Jones & Laughlin Steel Corp.

PROBABLY the greatest volume user of lubricating grease, from the raw materials stage to the finished products, is the steel industry. And, without a doubt, it demands the most in grease performance.

The unusual severity of steel processing operations, for instance, is the most exacting measure of a grease's mechanical stability and its resistance to breakdown, and is the cause of most grease failure in the industry.

A Solution?—In an effort to improve lubrication practice and maintain peak productivity in the hot strip mill of the Pittsburgh Works, we surveyed available greases about three years ago and decided that a multipurpose grease of the lithium base type might solve our problems.

Grease failure on the run-out tables can be most costly, both from the standpoint of downtime and product contamination through progressive failure and dripping of grease. An excess of friction or temporary bearing seizure can cause scratching and cobbling of the steel strip, with costly and sometimes disastrous results.

First Tests Good—Results of a 1000-hour test, using lithium 12-hydroxy stearate grease on a selected number of rolls, showed that this type of grease performed satisfactorily. It was unaffected by existing hazards and remained soft and pliable throughout the test.

Further experience has more than justified the test results and today, this grease is used on all electric motors, overhead cranes and coil

conveyors, in addition to the driven rolls of the mill run-out tables. Actually, this grease is now used on 3000 of the 7000 overall lubrication points in the mill, and has reduced the number of greases stocked from 17 to 10 brands plus types.

Good Pumpability—On the mill run-out tables, A and B, A has 1000 points of lubrication and B about 1180 points. Two heavy-duty end-of-line, automatic systems, 100 pound capacity each, deliver grease to the roller bearings as the strip is rolled at speeds up to 1500 fpm.

Getting grease out to this many bearings was no problem, but having 600 feet of traverse through 2 1/2 inch main supply lines required grease of excellent pumpability.



"THAT'S OUR STEEL STOCKROOM"

gentleman is referring to the Carpenter Mill-Branch Warehouse in your locality. Have you ever thought of making your nearest Carpenter Warehouse *your* steel stockroom, too?

en you do, you'll make the profitable discovery that your Carpenter Mill-Branch Warehouse is not only stocked with tool, alloy and stainless steels... it puts at your command one of the most comprehensive services on steel devised.

And *every* service is designed to free you from more of your steel problems... lets you concentrate on your one important job of making *more* and *better* products at a lower unit cost.

There's the man on the warehouse order desk ready to give quick information on sizes, prices and grades. There's professional in-the-shop help on tooling and production problems... service literature to help you get the most from every

pound of steel you use... as well as Metallurgical Counsel available to you direct from the Reading Mill.

Give your nearest Carpenter Mill-Branch Warehouse or Distributor a chance to prove how this comprehensive Mill-Branch Warehouse Service can pay off for you. Simply pick up your phone, call the number and be ready for action! The Carpenter Steel Co., 139 West Bern St., Reading, Pa.

Carpenter STEEL

Mill-Branch Warehouse Service

ESPECIALTY TOOL • ALLOY and STAINLESS STEELS



Motors and bearings on hot strip run-out table are lubricated with lithium base product. Top and bottom water sprayers intensify greasing hazards

over a relatively wide range of temperature. It is significant that since switching to this multipurpose grease we have been able to reduce the line pressure from 1500 to 1000 psi and still cover the 600 feet without freezing or carbonization of the grease in the more remote flexible hose connections to the bearings.

Saves Grease Too—System feeding table A, which is constantly running, pumps grease continuously and feeds grease every 20 minutes from the measuring valves. Table B, on which plate is usually run out, is fed every 30 minutes.

Records on grease performance during the three years since we specified this multipurpose product show that our grease consumption on the run-out tables has been cut in half. In addition to this, life of the roller bearings on the rolls has been increased by about 90 per cent. Previously, 12 to 15 rolls had to be changed every week, but now we change on the average of one a week and a bearing lasts from a year to a year and a half instead of six months.

Hazards Are Severe—The 4-high 96-inch hot-strip mill necessarily runs at peak speeds to meet urgent production demands, thus increasing the severity of operation, shock loading and the costliness of breakdown. And the additional hazards of water, heat and variation in temperature, from 125 to 350°

F, are imposed on the lubricant.

The automatic coiler, using fast motors for pull-up, and subjected to unusual hazards of heavy, sudden shock load, heat and water is also lubricated with this multipurpose grease, the motors being greased with pressure guns. The high mechanical stability of this grease makes it ideal for extended period lubrication of all motors.

High Water Tolerance—A recent experience on the pinch roll unit, on which the lower roll is constantly driven, illustrated the fact that this type of lithium grease possesses a high degree of water tolerance.

A break in the seal had exposed

the bearing to water entry and, although the bearing appeared to be functioning perfectly, it was taken out for lab inspection and testing as a precautionary measure. It was discovered that about 51 per cent water was present in the grease and, despite this, the lab rating showed the grease to have a 389 unworked, and a 450 worked consistency. It is believed that this property of water tolerance is more significant to good grease performance than water resistance alone, and provides an excellent safety factor when unusual water hazard is unavoidable.

Good On Conveyors—Another area of critical lubrication requirement most efficiently served by multipurpose grease of this type is coil conveying, where 95 flexible buggy conveyors feed from the coiler to the finishing and shaping departments. Here again, the hazards of heat, water, shock loading and dead load (each coil weighs from 2 to 3 tons) call for a grease of multipurpose characteristics.

There are 12 grease points on each buggy and it is difficult to reach them manually without affecting production schedules. It is therefore essential that the grease should resist breakdown and enable relubrication periods to be substantially extended. With this type of grease, the relubrication periods have been extended three-fold with consequent grease savings.

In three years experience with this type of lithium base grease the savings obtained in grease co-



Heat, speed, shock load and water are grease killers in this coiler service



Looking for something special?

provides you with Cold Finished Steel that's—

**CARBON RESTORED . . . ANNEALED
NORMALIZED . . . BRIGHT ANNEALED**

cold finishing bar mills now
de a modern controlled atmos-
furnace for the thermal treat-
of cold finished steel. This
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mean cash in the till for *you* . . .
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cold finished bars that lower pro-
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assure top-flight quality in the fin-
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lurgists are available to work *with*
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"Extra Services to Users of Cold Finished Steel."
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Title _____

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**J&L
STEEL**

sumption reduced downtime, bearing cost, purchasing and less interrupted production is evidence of its practicality in strip mill operation. And, because it has eliminated a number of greases the chances of costly misapplication are practically eliminated.

Piping Hot Caustic Soda

DIFFICULTIES in transporting hot caustic soda solutions will be surmounted by one chemical manufacturer by use of a 10,000-foot long wrought nickel piping system.

Fabricated by Gulf Coast Fabricating Co., Houston, the system will carry solutions at temperatures



WROUGHT NICKEL SYSTEM
... Heliarc welded in fabrication

around 600° F. Corrosion resistance properties of nickel make it excellent in this application. Even at these high temperatures, nickel corrosion rate by caustic soda is less than 0.020-inch per year.

Techniques—More than 2700 feet of Heliarc welding is done on the entire operation. Although pipe and fittings vary in diameter from 1 1/4-inches to 4 inches, with wall thicknesses ranging from 1/8 to 3.8-inches, all welds are made easily.

Edge preparation for the joints varies. Some joints are hand-ground to a 45-degree included angle, others to a sharper angle with a 1/32-inch root face. Two passes are used on all joints. The first is made without filler rod to obtain uniform underbead. In the second pass, nickel welding rod is used.

Welding current is direct-current

straight polarity, about 100 amp. An argon gas flow of approximately 10 liters per minute is used.

Electric Load Protection

One problem the light metal industry must face when higher power is used in electrolytic reduction will be protection of electrical apparatus when dropping potline load from ignitron rectifiers. Best means of protecting this equipment is by alternating current circuit breaker operation with auxiliary power maintained, according to an investigation made at the Mead, Wash., works of Kaiser Aluminum & Chemical Corp.

The report was made by S. J. Pope, of Kaiser, and J. K. Dillard and C. R. Marcum, Westinghouse Electric Corp., E. Pittsburgh, Pa., at the winter general meeting of the American Institute of Electrical Engineers in New York. The investigation was undertaken to get fundamental data on current and voltage surges in large ignitron rectifier installations.

Three Methods—Records were made when the potline was tripped off by alternating current circuit breaker operation, by automatic phase-back to reduce potline voltage to approach polarization value, followed by tripping cathode circuit breakers, and by tripping all cathode breakers simultaneously.

In the favored alternating current breaker method, the engineers reported no serious transient disturbances were observed in either secondary phase or cathode currents. Tripping of the primary power supply removed any tendency to unbalance currents between parallel rectifiers.

Hydraulics Proceedings Ready

Technical papers presented at the eighth annual meeting of National Conference on Industrial Hydraulics have been published as the proceedings of the conference. Lists of registrants, officers and committees are included, as well as illustrations and texts of the papers presented Sept. 4-5 in Chicago.

The conference is sponsored each year by the graduate school of Illinois Institute of Technology and by Armour Research Foundation of the institute.

CALENDAR OF MEETINGS

January 26-28, Truck-Trailer Manufacturers Association Inc.: Annual winter meeting, Edgewater Gulf hotel, Edgewater, Miss. Association address: 1024 N. Press Bldg., Washington, Managing director: John B. Hulse.

January 26-30, American Society of Heating & Ventilating Engineers: International heating & ventilating exposition, Grand Central Palace, New York. Society address: 5 Madison Ave., New York 10. Secretary: A. V. Hutchinson.

January 1-5, Associated Equipment Distributors: Annual meeting, Hotel Conrad B. Chicago. Association address: 30 E. 31st St., Chicago. Secretary: P. D. Herman.

February 2, Cleveland Engineering Society: Annual machine design conference, offices, 2136 E. 19th St., Cleveland. Information: Don Cornish.

February 4-6, Computer Conference Committee: Institute of Radio Engineers and American Institute of Electrical Engineers: Western computer conference, Hotel Statler, Los Angeles. Information: G. H. West, Industrial Relations Dept., Consolidated Engineering Corp., Pasadena 8, Calif.

February 9-11, American Road Builders Association: Annual meeting, Hotel Statler, Boston. Association address: 1319 Farnsworth NW, Washington 4. Secretary: Gen. Eng. Reybold.

February 15-19, Automotive Electric Association: Annual meeting, Edgewater Hotel, Chicago. Association address: 1024 Michigan Bldg., Detroit 26. Secretary: S. W. Potter.

February 16-19, American Institute of Mining & Metallurgical Engineers: Annual meeting, Hotel Statler, Los Angeles. Institutional address: 29 W. 39th St., New York 1. Secretary: E. H. Robie.

February 16-19, Industrial Ventilation Conference: Michigan State College, E. Lain Mich., Co-sponsor: Division of Industrial Health, Michigan Dept. of Health. Information: K. E. Robinson, Division of Industrial Health, Lansing 4.

February 18-20, Society of the Plastic Industry Inc.: Annual reinforced plastics conference, Shoreham hotel, Washington. Society address: 67 W. 44th St., New York 33. Executive vice president: William T. Clegg.

March 2-6, American Society for Testing Materials: Spring meeting, Hotel Statler, Philadelphia. Secretary: Robert J. Painter.

March 2-6, Pittsburgh Section, American Chemical Society and Spectroscopy Society: Pittsburgh conference on analytical chemistry and applied spectroscopy, Hotel William Penn, Pittsburgh. Information: L. E. Pitzer, U. S. Steel Co., 5225 Penn Place, Pittsburgh 30.

March 3-5, Society of Automotive Engineers: National passenger car, body and materials meeting, Hotel Sheraton-Cadillac, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warren.

March 6, Bituminous Coal Research Incorporated: Annual meeting, Netherland Plaza hotel, Cincinnati. Institute address: 2609 First National Bank Bldg., Pittsburgh 22. Secretary: C. A. Reed.

March 8-11, American Institute of Chemical Engineers: Annual spring meeting, Hotel Buena Vista, Biloxi, Miss. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

March 11, Foundry Education Foundation: Annual meeting and technical university industry advisory committee conference, Hotel Cleveland, Cleveland. Foundation address: Terminal Tower, Cleveland 13. Executive director: George K. Dreher.

March 11-12, Society of the Plastic Industry Inc.: Annual Canadian conference, General Brock hotel, Niagara Falls, Canada. Society address: 67 W. 44th St., New York 36. Executive vice president: William Cruse.

A NEW

UNITED

PACKAGE MILL

For rolling:

copper

brass

aluminum

low carbon

high carbon

stainless alloys

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starting with
.030" to .050"

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finishing with
.002" to .004"



a compact,
complete small mill. No cellars or elaborate foundations needed

TO meet the need of many manufacturers for a small, compact, inexpensive mill for the cold rolling of narrow, thin strip, UNITED developed, and is now offering, a NEW, COMPLETELY INTEGRATED "PACKAGE MILL."

Each unit is furnished fully equipped with roller bearing mounted rolls, recirculating rolling coolant system, mill guides, tension reels, belt wrappers if desired, strippers, motors and drives, all mounted on a fabricated base which serves also as a rolling coolant reservoir. The mill illustrated is a reversing type with motorized screwdown.

If a small, compact, completely self-contained "Package Mill" of this type fits into your present operations or contemplated expansion, consult us. Your inquiry will bring complete information at no obligation.

- Mill can be equipped for one way rolling by using a simple coil box instead of a reel.
- Sleeve type or collapsing mandrels are optional with or without grippers to meet user's requirements.
- Hand screwdown can be furnished instead of motorized screwdown as shown.

UNITED ENGINEERING AND FOUNDRY COMPANY

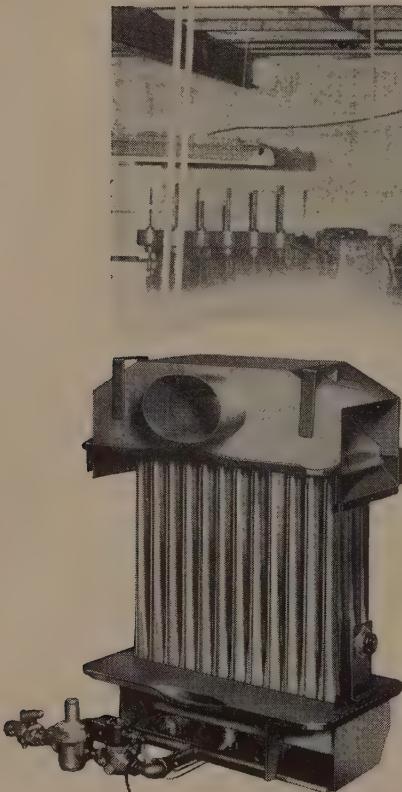
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Designers and Builders of Ferrous and Non-Ferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

HOW THE ROAR OF A JET LED TO A BETTER UNIT HEATER



Stainless Steel heat exchanger and burner assembly of Modine gas-fired unit heater.

**NOW...
SEE AND HEAR
"THE STORY OF
STAINLESS"**

ENDURO makes new Modine heater more durable, lighter, faster-acting

The use of heat-resisting stainless steel for jet engine exhaust parts gave Modine Manufacturing Company engineers an *idea*. Although gas-fired unit heaters never are subjected to jet engine temperatures or corrosive conditions, they are vulnerable to similar service hazards.

In new Modine models, Republic ENDURO Stainless Steel is used for heat exchangers and burners. From now on, ENDURO construction will *combat these former heater hazards*—corrosion due to gas acids and contaminated atmospheres... high-temperature scaling and flaking, which weakened metal walls and clogged burners... rusting caused by condensation and atmospheric moisture... cracking... and rapid discoloration.

In addition, ENDURO has saved 50 to 200 pounds of weight per unit by permitting lighter gauge construction of exchangers and burners. And, with metal mass reduced, tube warm-up lag is minimized. Tests show that the new units actually deliver heat *within 5 seconds* of the thermostat's signal.

This same type of ENDURO which has made new Modine heaters longer-lasting, lighter and faster-acting is available to you today. Republic metallurgists are ready to work with you in adapting ENDURO to *your own ideas*. Call your nearest Republic District Sales Office, or write:

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICE • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N.Y.

**FULL-COLOR, 16 MM SOUND FILM —
27 MINUTES RUNNING TIME**

Dramatic... historic... interesting. Available to qualified groups without charge. Requires 16 mm sound projector. Send name of organization, type of projector, requested date to Ideal Pictures Corp., Dept. T-4, 65 E. So. Water Street, Chicago 1, Illinois, or write Republic Steel, Dept. K, Cleveland 1, Ohio.

Republic
ENDURO STAINLESS STEEL



Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tain

High-Tensile Bolts Gain Fabricators' Nods

Report labor costs take a dip, less equipment needed, and maintenance cut to nothing. Tests at Northwestern's fatigue lab prove bolt strength superiority

High-TENSILE steel bolts for connecting structural shapes continue to gain greater acceptance among steel fabricators. Research at Northwestern University plus numerous recent field applications have shown that bolting is easier, safer and less expensive. Field experience shows that use of high-strength bolts cuts the cost per ton of steel substantially below that incurred with rivets. Labor costs take a dounced dip for several reasons.

Less Man-Hours—First, a two-man bolting team can assemble and tighten 400 bolts a day, while a four-man riveting team can drive only 300 rivets in the same period. Second, it is estimated that it takes about 25 cents worth of labor to assemble each 25-cent high-tensile bolt, as against 75 cents to install a 5-cent rivet—a distinct advantage for bolting. Finally it takes only a short time to train an unskilled bolting team to use an impact wrench.

Reduction of equipment required for the job is a substantial economic advantage. The two-man bolting team needs only a pneumatic impact wrench and a holding wrench. On the other hand, a four-man riveting team must have heating kerosene, tongs, cone or can, air jack, oily bar, and a pneumatic hammer or gun. This fact counts heavily when it comes to working above ground level or in hard-to-reach situations.

Maintenance Nil—Another cost cutting feature of the high-strength bolting technique is the dual elimination of maintenance. The reason for this is the fact that once these bolts have been tightened to their maximum clamp force, they never loosen. Impact wrench assures uniform tightness of each bolt, thus inspection easily uncovers a bolt requiring additional take-up.

For these reasons, the American Institute of Steel Construction specifies that only 5-10 per cent

need be inspected. Riveting, on the other hand, must be given 100 per cent inspection since 3-5 per cent of the rivets are usually loose and require replacement.

Engineering Pluses—Since high-strength bolts are stronger than ordinary rivets, they are ideal for use where a high degree of joint rigidity is called for, especially under conditions of dynamic loading. In cases where fatigue is critical, high-strength bolts tend to alleviate the stress concentrations which could cause failure.

Three groups of structural joints, identical except for the fastenings, were subjected to fully reversed cycles of fatigue loading in Northwestern University's specially constructed 250,000-pound fatigue machine. The machine tested two specimen joints at a time, applying loads of 250,000 pounds at the rate of 180 cycles per minute for 2 million cycles. Alternate tension and compression stresses were about 20,000 psi.

Results Conclusive—Joints fastened with high-strength bolts registered a fatigue strength of 17,200 psi, while the figure for hot-driven rivets was 15,820 psi, and for cold-driven rivets, 14,700 psi. No bolted joint failed through the bolt section, making it impossible to determine true value for a bolted joint in these tests.

It was clear that the clamping force of the bolt prevents the destruction of the joint to a greater degree than does its ability to resist shear. When the clamping force is sufficient, all the load may be transferred from one plate to the other by friction, without the fastener bearing against the sides of the holes. Thus the gross section of the plates is the determining strength factor, rather than the net section through the holes.

Other Advantages—It is not unusual for a contractor to report that the use of high-strength bolts has reduced the number of man

By HARRY O. McCULLY

Vice-President

Russell, Burdsall & Ward Bolt & Nut Co.
Port Chester, N. Y.

hours required for a given building project by as much as 50 per cent. Not the least of the advantages is the great reduction in construction noise, an important consideration in locations where building noise must be kept down.

High-tensile bolts can be employed in designs conforming to existing codes for riveted structures.

Stanford Gets Hot Cobalt

Largest radioactive source outside of AEC installations was recently unloaded at Stanford Research Institute, Palo Alto, Calif., to become the heart of a new radiation engineering laboratory. With elaborate precautions, the Cobalt 60 was transferred to a laboratory tank of 5400 gallons of water which provides a totally safe shield.

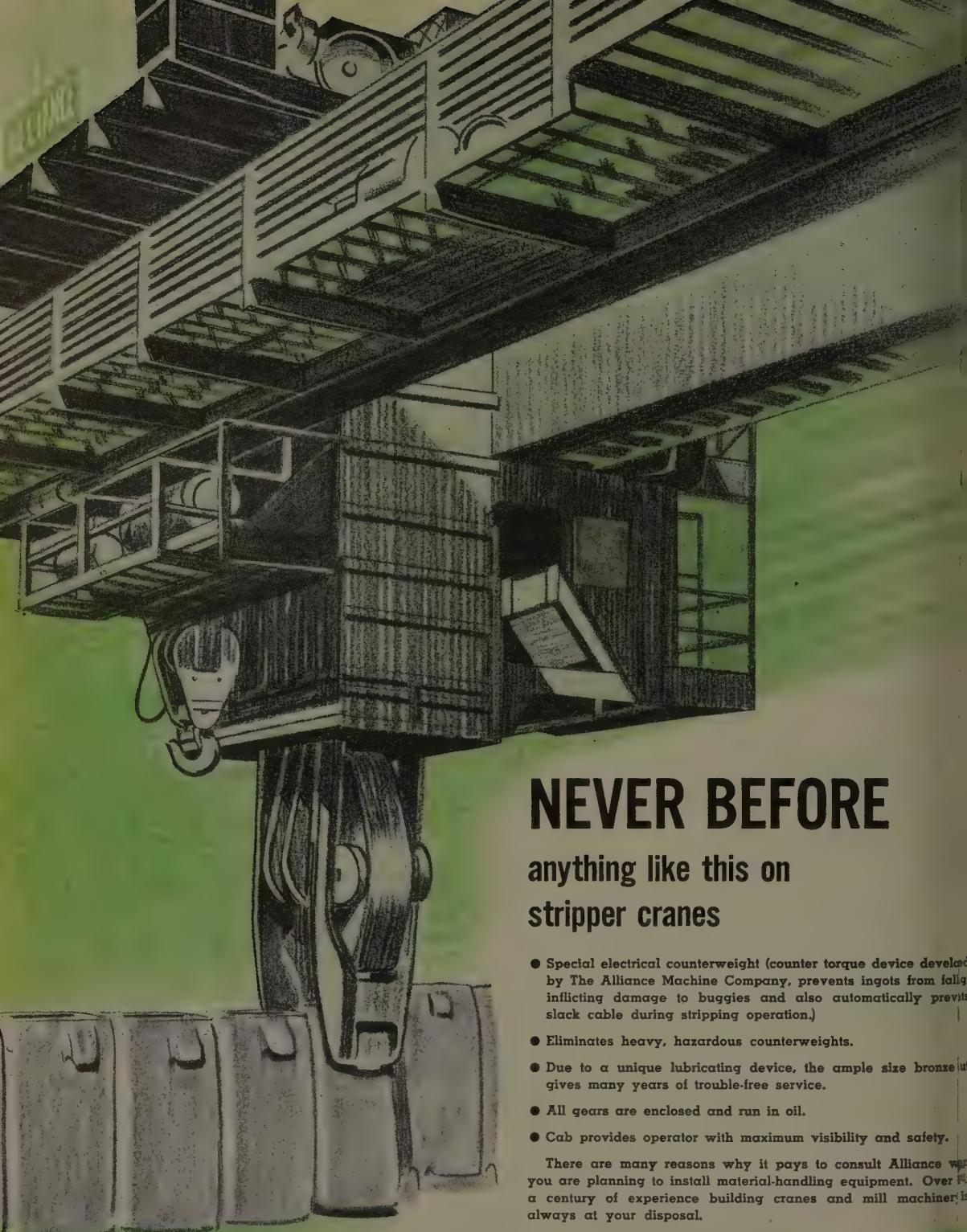
Weighing ten pounds when combined, the source itself comprises four cylinders and a rod, each a foot long and which can be nested or used in various combinations.

Staff radiation engineers will shortly begin experiments with the Cobalt 60 to develop industrial uses for large amounts of radiation. Some of the most promising uses include the nondestructive testing of complicated metal castings and parts. Service will be provided to companies wishing to explore uses of radiation for their processes or products.

Washer Maker Adds Plant

Start of construction on a new plant in Sharonville, O., near Cincinnati is announced by Cincinnati Cleaning & Finishing Machinery Co., Ironton and Cincinnati, O.

Erection of the new plant is part of an expansion plan the firm instituted at the end of World War II. While sales and engineering offices have been maintained in Cincinnati, previously all manufacturing production was carried on in two plants located in Ironton.



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anything like this on
stripper cranes

- Special electrical counterweight (counter torque device developed by The Alliance Machine Company, prevents ingots from falling, inflicting damage to buggies and also automatically prevents slack cable during stripping operation.)
- Eliminates heavy, hazardous counterweights.
- Due to a unique lubricating device, the ample size bronze gives many years of trouble-free service.
- All gears are enclosed and run in oil.
- Cab provides operator with maximum visibility and safety.

There are many reasons why it pays to consult Alliance when you are planning to install material-handling equipment. Over a century of experience building cranes and mill machinery is always at your disposal.

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Alliance

NEW

PRODUCTS and equipment

Reply cards on page 103 will bring you more information on any new products and equipment in this issue

Blade Grinder

rough grinds parallel ends

double spindle turbine blade grinder, model 125, rough grinds parallel ends of blades on a high-production basis. The 26-inch machine consists of a heavy cast iron base supporting two grinding heads dovetailed slides, operating on bearing ways. Centralized lubrication to these ways is provided. A rotary attachment carries a work-carrier having about 26 slots, in which blades are loaded man-



7. Pieces unload automatically after leaving the hold-down. Rotating attachment drive permits varying speed of work-carrier in a 3 to 1 ratio. Production: 20 to 25 pieces per minute, using 1/16-inch maximum stock end. Gardner Machine Co., Dept. ST, Beloit, Wis.
USE REPLY CARD—CIRCLE No. 1

Check Strand

tests small castings

his tester checks for leaks in all castings and inter-drilled passageways in a variety of parts. Hand-operated pressures up to 1000 psi are available. Volume per stroke is about 1 cu in. A poppet-type four-way valve is used to make possible evacuating

a cavity as well as filling it. A needle valve holds pressures over a long period of time. Pressure is obtained from an aircraft-type hand pump, supplied from a 5-gal-



ion reservoir. An access door at the rear makes cleaning and refilling simple. Various sizes can be supplied, either hand-operated or motorized. Planet Products Corp., Dept. ST, 6305 Warrick St., Cincinnati 27, O.

USE REPLY CARD—CIRCLE No. 2

Portable Spectrometer

... eases qualitative analysis

Comparison spectrometer simplifies qualitative analysis of metallic elements. To identify any particular element, wave length of its spectral lines can be noted on a calibrated scale. By referring to the table supplied with the instrument, identity of the unknown element is established. An optical system permits two spectra to be viewed simultaneously against a superimposed wave length scale.



A cuvette attachment furnished with the unit adapts it for use as a visual colorimeter for testing absorption spectra of liquids. National Instrument Co., Dept. ST, 5005 Queensbury Ave., Baltimore 15, Md.

USE REPLY CARD—CIRCLE No. 3

Worm Gear Speed Reducer

... automatic overload shutoff

Designed for use as a conveyor drive, this worm gear speed reducer incorporates automatic and instant shutoff device for overload protection. This feature eliminates need for sheer pin coupling.

When predetermined load is reached, motor current is immedi-



ately cut off by direct mechanical action of the overload. To restart, only removal of excessive load is necessary. Horsepower and ratio ratings are available in range from 3 1/2 to 1 up to 6300 to 1. Philadelphia Gear Works, Dept. ST, Venango & G Sts., Philadelphia 34, Pa.

USE REPLY CARD—CIRCLE No. 4

Lubricating Enamels

... brushed or sprayed on

Tough, adherent, load-bearing dry-lubricant finishes may be applied to any machine or instrument surface by the use of Liqui-Moly molybdenum-base lubricating enamels. Known as Molynamel, it is

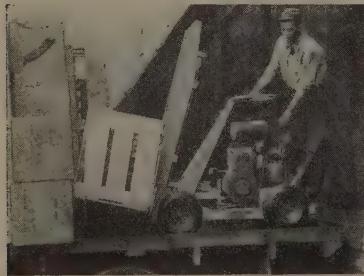
brushed or sprayed on. It gives a lustrous, hard, greasy-feeling but clean coating from a fifth to half a thousandth thick. Lockrey Co., Dept. ST, Southampton, N. Y.

USE REPLY CARD—CIRCLE No. 5

Parts Handling Truck

... lightweight, maneuverable

This 800-pound handler has convenience of hand truck, but employs 7.5 hp Wisconsin AEN engine to gain power and speed. Compact construction, small turning radius and front wheel steering enables



the model to move through narrow aisles and crowded or cluttered areas. Its light weight permits use on elevators and floors where heavy units cannot operate.

Driver rides on pedal platform. Maximum speed: 9 mph forward, 7 mph reverse. Truck operates in 56-inch aisles, turns in 68-inch radius. Kalamazoo Mfg. Co., Dept. ST, 1827 Reed St., Kalamazoo, Mich.

USE REPLY CARD—CIRCLE No. 6

Finger-Type Sisal Buff

... works curves, recesses

Finger-type design that makes it particularly adaptable for work involving curved surfaces and re-



cesses is a feature of this sisal buff. Finger is made in such a manner that only raw ends of the sisal fibres contact the work. Cutting compounds are picked up readily and held.

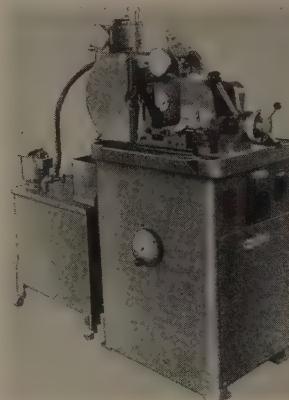
Advantages include faster cutting and longer wearing qualities. The buff is produced in sizes from 6 to 18 inches diameter for both hand and automatic machine buffing. Geo. R. Churchill Co. Inc., Dept. ST, 7534 Fayette St., N. Quincy 71, Mass.

USE REPLY CARD—CIRCLE No. 7

Centerless Grinding Machine

... for small diameter work

Centerless grinder, model TG-123, handles 1/16 to 1-inch diameter straight or contour work. Tolerances as fine as 0.0003-inch can be held consistently. Regulating wheel spindle range of 30 to 480 rpm is provided through an infinitely variable speed drive. Gearless



drive eliminates possibility of gear tooth pattern on the work.

Manual infeed lever is in a convenient, accessible position. Provision is made for mounting an 0.0001-inch indicator. Standard equipment includes contour dressing type manual wheel dressers. Coolant tank is a completely separate unit mounted on large casters. Royal Master Metal Products Co., Dept. ST, Riverdale, N. J.

USE REPLY CARD—CIRCLE No. 8

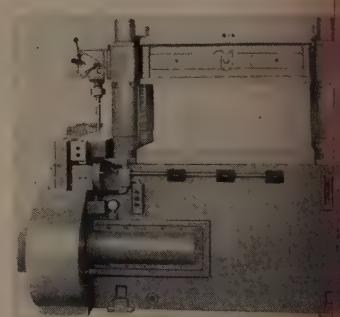
Die Tryout Press

... head rotates to 240 degrees

This 100-ton die tryout press is built with head that can be released quickly and rotated to any point up to 240 degrees. Press occupies 75 x 84 inches floor space. Its overall height is 82 inches. Head rotation permits operator to barber, spot, shear, fit and finish both

punch and die without removing die from the press.

Clutch is a combination flywheel type, air operated, with multi-disk brake. Electric clutch controls permits inching, single stroke, continuous operation and forward



reverse operation. Press has inch stroke and operates efficiently at 50 strokes per minute. All Tool Works, Dept. ST, 9281 Franklin Ave., Detroit 28, Mich.

USE REPLY CARD—CIRCLE No. 9

All-Steel Press Brakes

... 50, 100, 150-ton series

Line of all-steel press brakes includes 50, 100 and 150-ton series. Laminated nonmetallic ways maintain accurate alignment and prevent wear to a minimum. Double reduction gearing and double end vertical drive with gearing enclosed in a sealed oil bath provide balanced and efficient power transmission to the ram.

Air-cooled clutch and brakes can be controlled either by foot treadle



or pushbutton, permitting joggling, single stroking and continuous operation. With a motor reverse switch, flywheel can be reversed to pull the ram out of accidental stops. Self-locking, power-operated safety adjusting screws are fitted with micrometer dials to permit dupli-

SUMMERILL HYDRAULIC TUBING

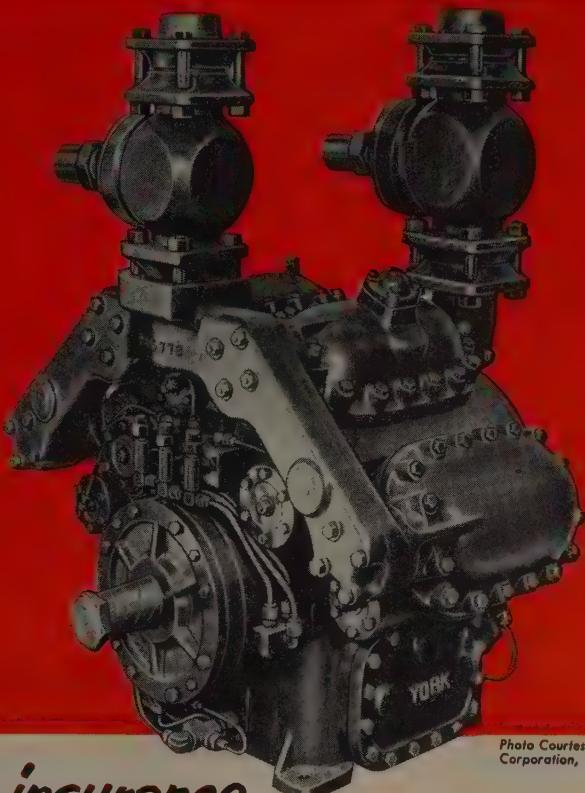


Photo Courtesy of York Corporation, York, Pa.

*Gives you extra insurance
against pressure lubrication failure!*

HERE'S WHY IT'S "EXTRA"

- ★ Summerill Tubing is made in the nation's most recently built plant for the exclusive production of cold drawn seamless steel tubing, in a full range of carbon steel sizes from $\frac{3}{16}$ " to $1\frac{1}{2}$ " O.D. The latest methods and equipment are used.
- ★ Only selected raw material—the very best—is used to make Summerill Hydraulic Tubing. It is a true premium product, made in accordance with JIC Standards for tubing in industrial equipment.
- ★ Every length is closely inspected and rigorously tested before shipment to assure uniform physical characteristics and hydrostatic qualities; ends are flared to be sure of ductility, etc.

The ammonia compressor illustrated above is typical of the long list of machine units which employ Summerill cold drawn seamless steel Hydraulic Tubing for pressure lubrication systems. Some units use tubing flared for fittings, others use it with straight ends—but in every case, the prime requirement is uniformly, dependably high quality.

This tubing *can't fail!* It has to be foolproof . . . extremely ductile and free from any internal or external defects that might cause breakage in use. That's why steel tubing gets the call today. It offers extra strength, extra protection—and Summerill Hydraulic Tubing brings you these qualities at their peak. • Let us work with you. *Summerill Tubing Company Division, Columbia Steel & Shafting Company, Pittsburgh 30, Pa.*



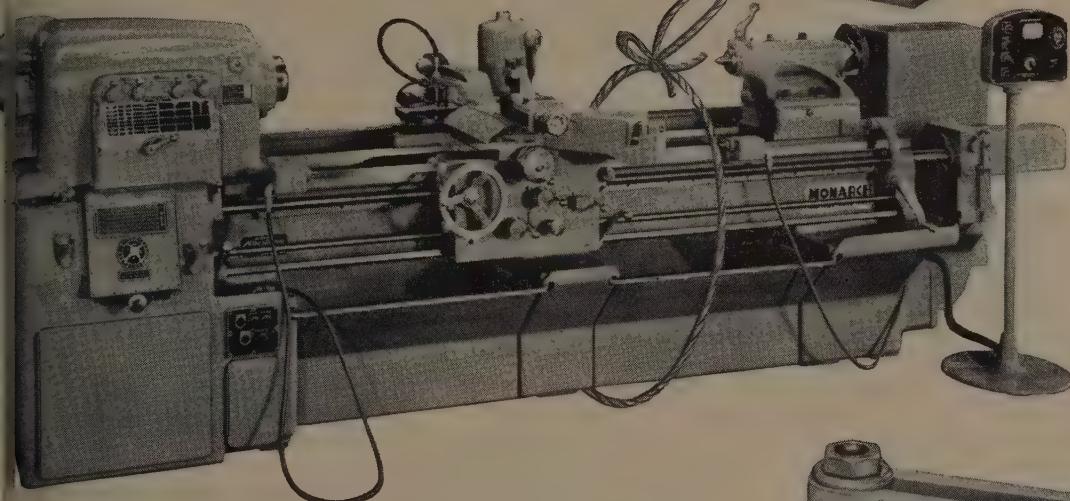
IN COLD DRAWN SEAMLESS STEEL TUBING
SPECIFY *Summerill* AND BE SURE!

W&D 4438

COST

-after 276 working days . . .

\$00⁰⁰



IT WROTE OFF ITS COST IN 10½ MONTHS!

This report comes from a well-known machine tool manufacturer (not us!). We can show you many similar ones from all kinds of plants. They all add up to one incontrovertible fact—Monarch Air-Gage Tracer controlled, fully automatic turning, with its single running tool, delivers output at top efficiency. Why not? Look how many ways it saves! In turning time. In setup time. In tooling time and costs. In subsequent grinding. It's true of short runs as well as long ones.

The Monarch Air-Gage Tracer is known everywhere for its superb accuracy of duplication. The swiveling type used here adds to this accuracy an amazing versatility. Apply it to our 20 x 72 Series 60 Lathe and add the Autocycle Control as above, and you have the shop man's dream come true—the ultimate in versatility *plus* fully automatic operation.

This manufacturer, after only brief experience with his Series 60, quickly added a 20 x 168 Model M Heavy Duty Lathe with similar equipment. Together, using round templates, these machines are delivering automatic output of over 600 jobs!

The Air-Gage Tracer is right! Its performance is right! Why don't you write—for complete information? Request Booklet #2606 and mention your specific requirements. . . .

The Monarch Machine Tool Company, Sidney, Ohio.

HERE'S HOW!

. . . And by the user's own figures! This lathe was bought to turn 20 to 25 jobs. It proved so versatile that, with the larger Model M, it's now turning 600. Time savings vary from job to job, but here's a sample. One difficult work piece used to require 3½ hours' turning. It's turned now—in lots of 24—in 10 min. per piece. Each *lot* in only slightly more time than it used to take for each *piece*!

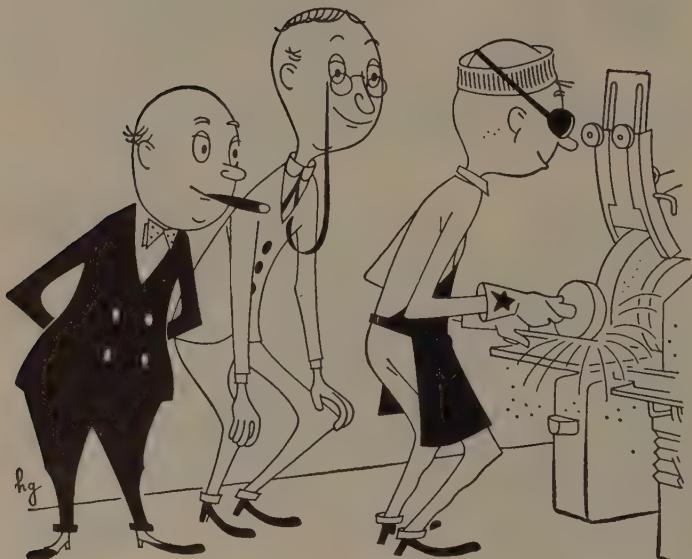
Monarch
TURNING MACHINES



• FOR A GOOD TURN FASTER • • • • • TURN TO MONARCH • • • • •

SIMONDS
ABRASIVE CO.

Grinding Wheels



An ex-PFC ranks high
with the "top brass!"

He's now an *operator* first class, and he sure knows the grinding wheels that make his work "come to attention."

They're Simonds Abrasive Company grinding wheels. And they prove themselves in a big way long before he even uses them. Right in Simonds own plant these wheels must satisfy a practical, rough-minded group of department heads that they're *right* for the job . . . grind fast . . . cut cool . . . and keep their shapes.

This insistence on excellence is the reason why Simonds wheels give top rate results on rough grinding, finishing, sharpening, polishing, cutting-off, etc., . . . and why you should know where to get them.

Write for name of your Simonds Abrasive distributor and free data book.



SIMONDS ABRASIVE CO., PHILADELPHIA 37, PA. BRANCH WAREHOUSES: CHICAGO, DETROIT, BOSTON
DISTRIBUTORS IN PRINCIPAL CITIES

Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co. Ltd., Arvida, Que.

NEW PRODUCTS and equipment

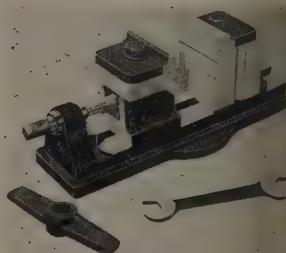
gases or fluids under both high and low pressures. Hose is weakened by constant vibration, flexing and will not rust or corrode. Republic Rubber Division, Lee Rubber & Tire Corp., Dept. 1, Youngstown 1, O.

USE REPLY CARD—CIRCLE No. 17

Utility Clamping Vise

. . . setup time reduced

This versatile four-in-one reduces setup time, eliminates costly jigs. The vise saves time required to hunt for and adjust clamps, bolts, parallel strips, ordinarily used in rigging work.



machine tools. All parts necessary for clamping work securely and accurately are included.

Rear turret revolves, presenting four different faces for holding various kinds of work. Auxiliary jaws at the top of each turret can be spread at an angle to hold odd-shaped work. Brown Engineering Co., Dept. ST, Reading 2, Pa.

USE REPLY CARD—CIRCLE No. 18

Universal Joint

. . . for remote control uses

Designed primarily for instrumentation and remote control applications where backlash must be kept to a minimum, the universal joint employs $\frac{1}{8}$ -inch diameter centerless ground pivots and face ground center blocks of

USE A
REPLY CARD

Just circle the corresponding number of any item in this section for more information.



INFORMATION

AVAILABLE FOR THE ASKING

Single Set Vises

ers Vise & Tool Co.—Three-angle-set vises for holding milling and grinding jobs rigidly at any angle are subject of 6-page folder. Devices feature 360-degree base rotation and 90-degree movement of both lower and upper blocks. Typical application drawings are included.

Aluminum Weld Treatment

rssey Corp.—"A New and Improved Process for Preparing Aluminum and Its Alloys for Spot Welding" is title and subject of bulletin D which outlines the Diversey process. Technical details, descriptive tables, graphs and case histories are included.

Soot Blower

ntental Foundry & Machine Co.—Vulcan long distance soot blowers with air and motor drives and suitable for travel more than 20 ft are subject of bulletin 1002. Blowing with air or air without change in original equipment is possible, and rotation and traversing speeds are infinitely adjustable.

Half Storage

ck-Gallagher Mfg. Co. — The advantages of using Rotabin rotary tables to store parts, tools and materials are discussed in 16-page booklet "The Science of Economical Storage." Advantages include 50 per cent savings in floor and material handling costs. Construction features are also described, along with accessories.

Air Motors & Devices

ows Co.—24-page bulletin CL-1 is the story of Bellows air motors and how these compact, reliable devices make possible the economical conversion of

standard machine tools into fast automatic units. A myriad of application photos, plus detailed illustration of the units "integral construction" are featured. In clamping operations, pressures up to 15,000 psi are possible.

76. Zinc Conversion Coatings

United Chromium, Inc. — Uni-chrome Dip and Anozinc processes for producing corrosion-resisting chromate conversion coatings on metal parts are briefly described in small 6-page folder CC-1.



77. Packaging Techniques

Hinde & Dauch Paper Co. — Though the Holidays are just over, now is the time many companies start thinking about next year's holiday business. An aid to this planning is 30-page illustrated booklet "How to Use Holiday Corrugated Boxes." Some excellent pointers on merchandise and equipment packaging are presented in this No. 13 booklet in the Little Packaging Library.

78. Insulation With Silicones

Dow Corning Corp.—Advantages of using Class H insulation made with silicones in electric motors are outlined in 4-page illustrated bulletin G-26. Twelve types are described and their applications and characteristics are given.

79. Forging Presses

E. W. Bliss Co.—Specification data on a new line of high speed forging presses are contained in 4-page illustrated bulletin 42. Presses are available in eleven sizes with capacities ranging from 300 tons to 4000 tons.

1-26-53

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Penton Building, Cleveland 13, Ohio

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4	14	24	34	44	54	64	74	84	
5	15	25	35	45	55	65	75	85	
6	16	26	36	46	56	66	76	86	
7	17	27	37	47	57	67	77	87	
8	18	28	38	48	58	68	78	88	
9	19	29	39	49	59	69	79	89	
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80. Conveyor Belting

Barber-Greene Co. — Engineering and precision manufacturing behind B-G conveyor belts are summed up with pictures, charts and tabular data in 8-page illustrated bulletin "Conveyor Belts." Three major causes of belt failure and their cure are discussed. Selection tables simplify choosing the right belt for each application.

81. Cutting Gear Teeth

Cincinnati Milling Machine Co. — Instructions on cutting worms and worm-wheels, and spur, helical and bevel gear teeth on a milling machine are contained in 60-page illustrated booklet M-1769. Much technical info, including graphs, formulas, and line drawings are included.

82. Small Die Castings

Dollin Corp.—Typical examples of Zamak alloy No. 3 or 5 small die castings are shown in 4-page illustrated bulletin "New Design Horizons." Company produces intricate parts at high speed and offers its facilities to you. Possible savings are outlined.

83. Powder Metal Parts

Metachem Laboratories, Inc.—"A Short Cut to Production of Powdered Metal Parts" is a 4-page illustrated bulletin that describes mixers, briquette presses and dies, sintering furnaces, coning presses and dies, packaged complete mixes, molding kit, retort kit and other equipment and services that are available to prospective producers of powdered metal parts.

84. Vibration Meter

Consolidated Engineering Corp. — Looking for a vibration meter that gives direct readings of both linear and torsional velocity and displacement for easy calculation? If so, bulletin CEC 1505B describes it in 4 pages. It has five ranges of sensitivity and accommodates two pickups at one time.

85. Industrial Insulations

Baldwin-Hill Co. — 20-page engineering data book "Industrial Insulations" deals with materials which apply to the temperature range from -150°F to 1800°F. Insulating cement, block, felt, blanket and pipe covering are a few of the products shown. Complete thermal-

conductivity graphs and heat charts, together with typical sizes, packaging and densities simplify selection and application.

86. Crane Cab Coolers

Dravo Corp.—If it's hot at level in your plant, think what up in the crane operator's cab. Here a 24-page illustrated booklet gives the details on crane cab coolers and conditioners. Units for cranes, temperatures and type installations are described and specifications given. Might be a to more efficiency.



EDITORIAL REPRINTS

87. Porcelain Coatings

High alloy steel shortages focused attention on use of porcelain enamel coatings on the more abundant base metals. A review of design and fabrication data shows some of the "impossible" coating applications of the past are becoming routine. W. A. Barrows summarizes this data in STEEL reprint "Porcelain Coatings: Ingenuity Is the Progress Factor."

88. Tinning Problems

Solution contamination problems at Wheeling Steel Corp. were minimized with Alemite oil mist lubrication of conductor rolls of two electrolytic tinning lines. Results, even "menders" and less maintenance. The full story is in STEEL reprint "Oil Mist Tames Tinning Problems."

89. Two Way Press

In STEEL reprint entitled "Two Way Press Produces High Pressure Parts" is described press built by A. B. Farquhar Co. for Cameron Iron Works, Inc. Main vertical ram has 5000-ton capacity and two horizontal rams rated at 2000 tons. Techniques developed with this giant bridge the field of possible press fly shapes and patterns.

90. Cam Curves

You can whip the bugaboo of contoured cam surfaces by using an arid machines, some with special attachments, or special machines. One of the ways to do it are given in STEEL reprint entitled "Cam Curves Aren't Tough," by J. E. Hyler.

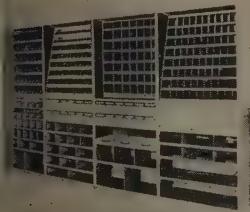
the 303 stainless steel. Forks
rass with precision reamed
and with outer surfaces
plated to meet Army speci-
cations 72-53 for 100 hour salt
resistance. Kupfrian Mfg.
Dept. ST, 396 State St., Bing-
ham, N. Y.

PLY CARD—CIRCLE No. 19

Crib Installations

Inserts fit all crib needs

A variety of inserts can be placed
on shelving for tool crib ar-
rangements, as shown in this in-
stallation. Different types of in-
serts can be used, depending upon
requirements, for storage of drills,



ers, taps, milling cutters and
other tools. Each shelf is equipped
with label holders. Lyon Metal
Products Inc., Dept. ST, Aurora, Ill.

PLY CARD—CIRCLE No. 20

Some Pressure Additive for cutting, lubricating oils

lykote M-55 is a colloidal dis-
persion of Molykote powder sus-
pended in a synthetic vehicle com-
bined with any petroleum or sul-
phur base cutting or lubricating
oil. It can be used as an extreme
pressure additive to conventional
oils in force-feed lubri-
cation systems of machinery and
as an additive to cutting and cool-
ing oils whenever frictional com-
pression is a substantial part of
the cutting force. Alpha Corp.,
Dept. ST, 179 Hamilton Ave.,
New Haven, Conn.

PLY CARD—CIRCLE No. 21

USE A REPLY CARD

Just circle the corresponding
number of any item in this
section for more information.

PROBING INTO 30 FEET OF SOLID STEEL FOR DEFECTS SPERRY...

OFFERS THESE COST SAVING ADVANTAGES

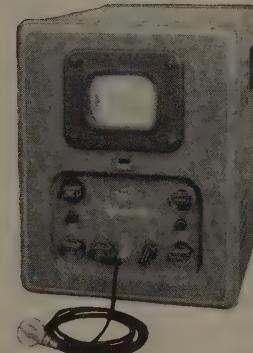
- Easily portable for on-the-job inspection.
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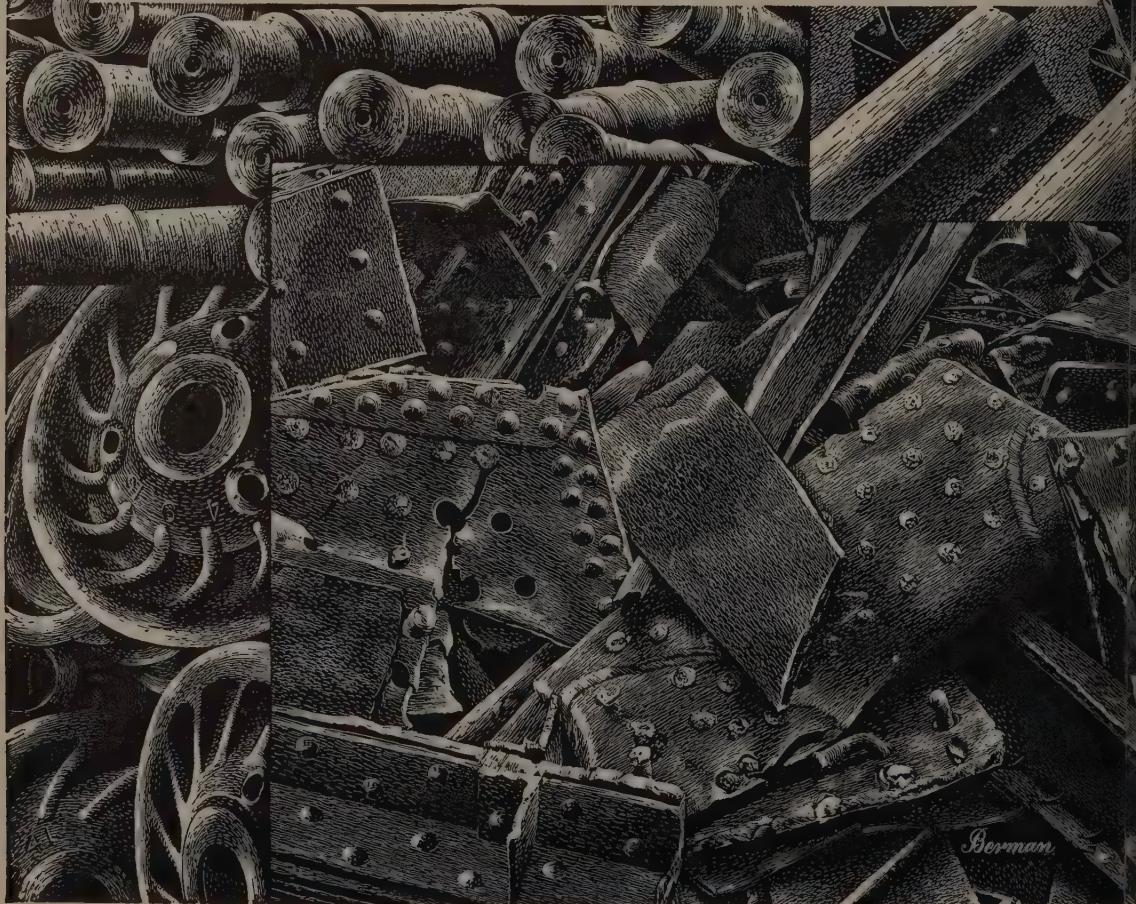
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LEADERS IN IRON AND STEEL SCRAP SINCE 1889



THE STRONG DEMAND for steel is making itself felt for as far ahead as May.

With the approach of the government deadline Feb. 1 for steel companies to open their order books for May delivery of nondefense steel, the companies are being deluged with requests for space for steel products now in tightest supply. Included are heavy and wide sheared plates, hot-rolled and cold-finished carbon and alloy bars over an inch in diameter, hot-rolled and cold-rolled carbon sheets.

IGN OF THE TIMES—Further evidence of the sustained strong demand for the major products is the eagerness with which consumers, particularly automakers, seek conversion arrangements for sheets and bars. Under this method consumers get semi-finished steel from producers short on rolling capacity and engage other producers with surplus rolling capacity to roll it into finished forms.

In most cases, fast processing is wanted by those currently seeking conversion arrangements.

ROOM FOR HOPE—As the year progresses, deliveries of steel should speed up. The steel industry as a capacity bigger than ever before, it is operating near capacity, and it is planning substantial further expansion.

MORE EXPANSION—This year, steel companies plan to spend about \$1 billion for additional expansion, the American Iron & Steel Institute reports. This will provide for approximately 4 million tons of steel and other necessary additional facilities. Last year a record high of \$1,170,000,000 was spent for capital expansion and improvements. Simultaneously, the industry made the greatest yearly increase in steelmaking capacity in history, nearly 9 million tons, for a new high of 117.5 million tons.

SLOW DOWN—Temporarily the industry dropped from its record-breaking production pace. A strike in the Youngstown district cut the national rate of steelmaking to 98 per cent of capacity in the week

ended Jan. 24. This is equivalent to 2,209,370 net tons of steel for ingots and castings. In the preceding week when the national rate was 99.5 per cent the output was at an all-time high of 2,243,000 tons.

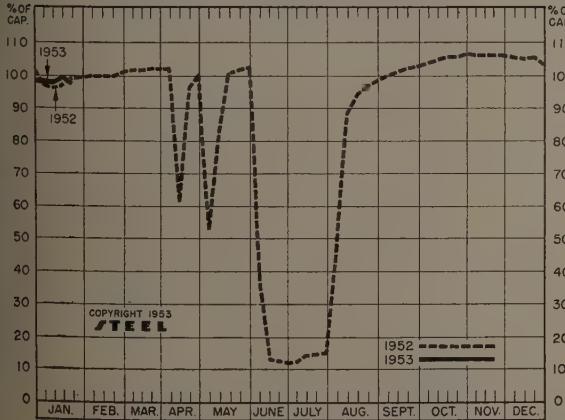
While there are not enough of some of the finished steel products to go around, others are in adequate supply. For instance, hot-rolled and cold-finished bars over an inch in diameter are in very tight supply, while those products in diameters of less than an inch are in good supply.

SOMETHING TO WATCH—In some cases, consumers are buying foreign steel to piece out their needs. Foreign iron and steel producers are increasing their competition for business in the United States. Additional evidence of this is the offering, after a long absence, of Australian pig iron on the Pacific Coast at \$3 to \$3.50 a ton under domestic prices. This renewal of competition comes at a time when demand for merchant pig iron is the lightest it has been for a long time. Gray iron foundries, users of merchant pig iron, have been experiencing a business lag.

Warehouses, from which the small consumers get their steel, still enjoy a good flow of orders for the most-wanted products, although demand is easing. This easing and steady receipts of steel from mills are making some improvement in warehouse stocks, which have been badly unbalanced.

SCRAP KEEPS PACE—Scrap steel, an important ingredient in the making of new steel, continues to be adequate in supply despite the increased needs of the expanding steelmaking capacity. A localized exception to this is in the East where U. S. Steel Corp.'s purchase of scrap to stock its new Fairless Works at Morrisville, Pa., increased the interest in steelmaking grades, which are holding at government ceiling prices. Also, that plant's purchase of cast grades of scrap firmed up the entire market on cast scrap, which had been selling below ceilings.

NATIONAL STEELWORKS OPERATIONS

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STEEL

DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

Week Ended	Jan. 24	Change	Same Week	1952	1951
Pittsburgh	105	—	2*	97	98.5
Chicago	105.5	—	101.5	102	99.5
Mid-Atlantic	95	+ 1	99	99	99.5
Youngstown	98	0	105	106	106
Wheeling	103.5	+ 2.5	100.5	98.5	98.5
Cleveland	100†	+ 2*	97.5	103.5	103.5
Buffalo	106.5	0	104	104	104
Birmingham	106†	+ 9	104	100	100
New England	90	+ 1	83	92	92
Cincinnati	93.5	+ 0.5	101	106	106
St. Louis	101	+ 8	81.5	88	88
Detroit	106	+ 1.5*	104.5	107.5	107.5
Western	105.5	0	104	105	105
Estimated national rate	98†	—	1.5	99.5	100

*Change from preceding week's revised rate.

†Estimated national, Mid-Atlantic, Birmingham, and Cleveland rates are based on Jan. 1, 1953, capacities; others, on Jan. 1, 1952, capacities.

Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

Composite Market Averages

FINISHED STEEL PRICE INDEX: Jan. 20 Jan. 13 Month December
Bureau of Labor Statistics 1953 1953 Ago Average
(1947-1949=100) 130.7 130.6 130.6

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)

Week Ended Jan. 20, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	\$3.775	Sheets, C.R. carbon	\$5.275
Track spikes	6.650	Sheets, galv.	6.915
Track bolts	9.958	Strip, C.R. carbon	5.100
Thin plates	4.775	Strip, C.R. stainless	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft.)	7.000
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft.)	8.887
Structural shapes	4.200	Boiler tubes (100 ft.)	31.663
Bars, tool steel (lb.)	1.576	The plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Tire plate (100 lb base box)	7.750
Bars, stainless (lb.)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.458
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.920
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.720

FINISHED PRICE INDEX, Weighted:

Calculated by STEEL*	Jan. 22	Week	Month	Year	5 Yrs.
	1953	Ago	Ago	Ago	Ago
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	132.93
Index in cents per lb.	4.912	4.912	4.912	4.657	3.601

ARITHMETICAL PRICE COMPOSITES:

Calculated by STEEL*

Finished Steel, NT	\$110.98	\$110.98	\$110.98	\$106.32	\$78.41
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.24	39.63
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	39.157
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	40.23
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	41.92

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Jan. 22	Week	Month	Year	5 Yrs.
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Philadelphia	4.502	4.502	4.502	4.223	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.40
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Clayton, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pittsburgh	3.75-4.225	3.75-4.225	3.75-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.80-6.05	5.80-6.05	5.80-6.05	4.85-5.60	3.71
Wire, Basic, Pittsburgh	5.10-5.225	5.10-5.225	5.10-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	6.20-6.35	6.20-6.35	6.20-6.35	5.90-6.20	4.70
Tin plate, box, Pittsburgh	8.95	8.95	8.95	8.70	6.70

SEMI-FINISHED

Billets, forging, Pitts. (NT) \$70.50 \$70.50 \$70.50 \$66.00 \$56.50
Wire rods, 3/8", Pitts. 4.425 4.425 4.425 4.10-30 3.05

PIG IRON, Gross Ton

Bessemer, Pitts.	\$55.50	\$55.50	\$55.50	\$53.00	\$40.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del., Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del., Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry (Birm.) del., Cin.	58.93	58.93	58.93	55.49	40.74
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Etna, Pa.	228.06	228.00	228.00	188.00	151.00*

* F.O.B. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	\$44.00	\$44.00	\$44.00	\$40.50	
No. 1 Heavy Melt, E. Pa.	41.50	41.50	42.50	46.00	
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	39.25	
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	44.00	40.25
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	43.00	39.75
Rails, Rerolling, Chicago	42.50	52.50	52.50	52.50	60.00
No. 1 Cast, Chicago	43.00	43.00	44.00	49.00†	63.50

† F.O.B. shipping point.

COKE, Net Ton

Beehive, Furn., Connsville	\$14.75	\$14.75	\$14.75	\$12.00-13.00	
Keokuk, Fdry., Connsville	17.00	17.00	17.00	17.50	14.00-15.50
Oven Fdry., Chicago	24.50	24.50	24.50	23.00	18.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEL. Minimum delivered prices are approximate and do not include 3% tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

Basic, Bethlehem, Pa. B2 \$56.50 \$57.00 \$57.50 \$58.

New York, del. 60.78 61.28 61.52 61.

Newark, del. 59.62 60.02 60.52 60.

Philadelphia, del. 59.25 59.75 60.25 60.

Birmingham District

Alabama City, Ala. R2 50.88 51.38

Birmingham R2 50.88 51.38

Birmingham S9 51.38

Woodward, Ala. W15 50.88 51.38

Cincinnati, del. 58.93

Buffalo District

Buffalo R2 54.50 55.00 55.50

Buffalo H1 54.50 55.00 55.50

Tonawanda, N.Y. W12 54.50 55.00 55.50

No. Tonawanda, N.Y. T9 55.00 55.50

Boston, del. 65.15 65.65 66.15

Rochester, N.Y. del. 57.52 58.02 58.52

Syracuse, N.Y. del. 58.62 59.12 59.62

Chicago District

Chicago I-8 54.50 55.00 55.50

Gary, Ind. U5 54.50

Indiana Harbor, Ind. I-2 54.50

So. Chicago, Ill. W14 54.50

So. Chicago, Ill. Y1 54.50

So. Chicago, Ill. U5 54.50

Milwaukee, del. 56.67

Muskegon, Mich., del. 61.30

Cleveland District

Cleveland A7 54.50

Cleveland R2 54.50

Akron, O., del. from Cleve. 57.11

Lorain, O. N3 54.50

Duluth, I-3 54.50

Erie, Pa. I-8 54.50

Everett, Mass. E1 59.50

Fontana, Calif. K1 60.50

Granite City, Ill. G4 56.40

St. Louis, del. (inc. tax) 57.15

Ironton, Utah C11 54.50

Geneva, Utah C11 54.50

Lone Star, Tex. L6 50.50

Minnequa, Colo. C10 56.50

Rockwood, Tenn. T3 58.50

Pittsburgh District

Neville Island, Pa. P6 55.00

Aliquippa, del. 56.37

McKees Rocks, del. 56.04

Lawrenceville, Homestead, Wilmerding, Monaca, del. 56.66

Verona, Trafford, del. 57.19

Braddock, del. 57.45

Bessemer, Pa. U5 54.50

Clairton, Rankin, So. Duquesne, Pa. U5 54.50

McKeesport, Pa. N3 54.50

Monessen, Pa. P7 56.50

Sharpville, Pa. S6 55.00

Steelton, Pa. B2 56.50

Swedeland, Pa. A3 58.50

Toledo, O. I-3 54.50

Cincinnati, del. 59.97

Troy, N.Y. R2 56.50

Youngstown District

Hubbard, O. Y1 54.50

Youngstown X1 54.50

Youngstown U5 54.50

Mansfield, O., del. 59.15

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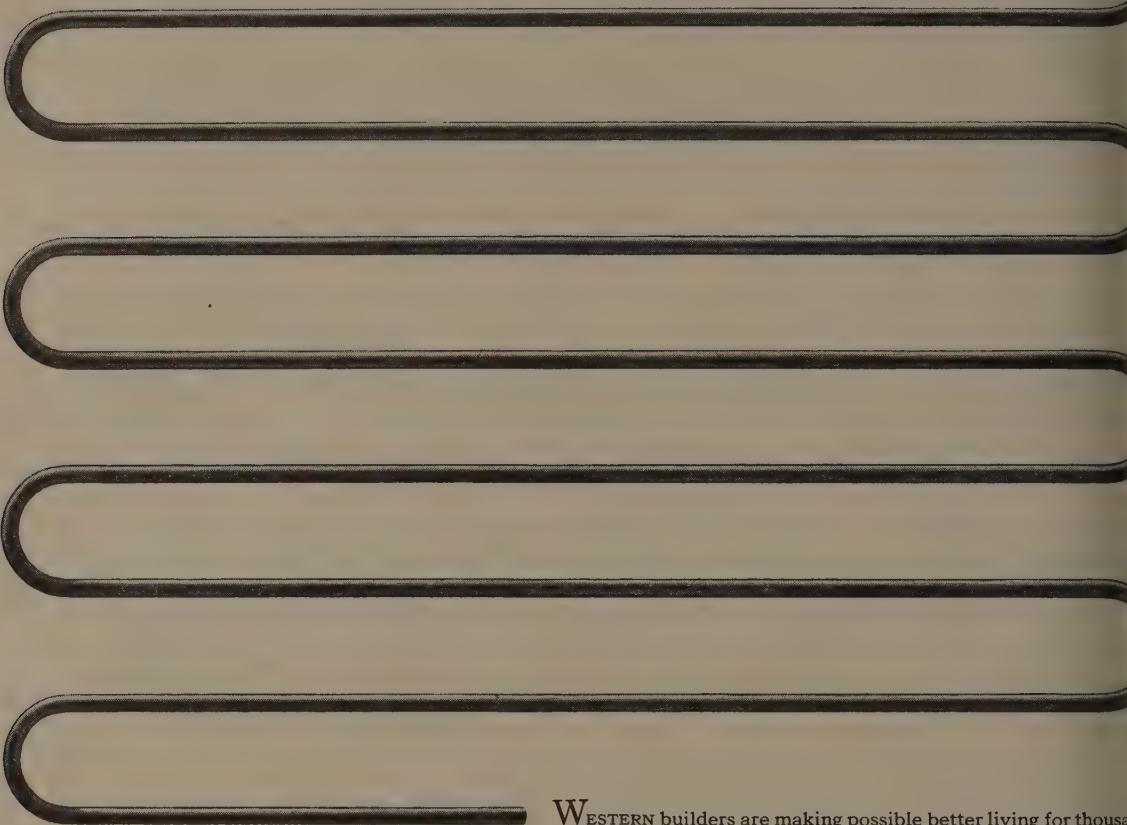
Semifinished and Finished Steel Products

All prices quoted under GCPR as reported to STEEL, Jan. 22, 1953, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

STRUCTURAL		PLATES, Carbon Steel		BARS & SMALL SHAPES, H. R.		BARS, Reinforcing	
a, Carbon, Forging (INT)	\$1.00	Carbon Steel Stand. Shapes	Alabamacity, Ala. R2	3.90	High-Strength Low-Alloy	Seattle B3, N14	4.70
a, Calif. K1	54.00	Alabamacity, Ala. R2	3.85	Aliquippa, Pa. J5	3.90	So. Chicago, Ill. R2	3.95
ll, Pa. U5	54.00	Aliquippa, Pa. J5	3.85	Bessemer, Ala. T2	5.925	So. Duquesne, Pa. U5	3.95
S24	75.00	Ashland, Ky. (15) A10	3.90	Bethlehem, Pa. B2	5.925	So. San Francisco B3	4.70
Alloy (INT)		Bessemer, Ala. T2	3.85	Claifton, Pa. U5	3.90	SparrowsPoint, Md. B2	3.95
R1	\$57.00	Bethlehem, Pa. B2	3.90	Clairton, Pa. U5	3.90	Sterling, Ill. (1) N15	4.70
a, Calif. K1	83.00	Clairton, Pa. U5	3.85	Claymont, Del. C22	4.35	Struthers, O. Y1	3.95
ll, S5	65.00	Fairfield, Ala. T2	3.85	Cleveland, R2	5.925	Torrance, Calif. C11	4.65
d, Pa. C18	57.00	Fairfield, Ala. T2	4.50	Coatesville, Pa. L7	4.35	Youngstown, R2, U5	3.95
ll, Pa. U5	57.00	Gary, Ind. U5	3.85	Conshohocken, Pa. A3	4.35		
BLOOMS & SLABS		Geneva, Utah C11	3.85	Ecorse, Mich. G5	4.45		
on, Rolling (INT)		Houston S5	4.25	Gary, Ind. G5	4.45		
ier, Pa. U5	\$59.00	Ind. Harbor, Ind. I-2	3.85	Fairfield, Ala. T2	3.90		
a, Pa. U5	59.00	Johnstown, Pa. B2	3.90	Ind. Harbor, Ind. I-2	5.925		
Ala. T2	59.00	Johnstown, Pa. Mo. S5	4.45	IndianaHarbor, Ind. Y1	6.425		
ld, Ala. T2	59.00	Lackawanna, N.Y. B2	3.90	Johnstown, Pa. B2	5.925		
a, Calif. K1	78.00	GraniteCity, Ill. G4	4.60	Lackawanna, N.Y. B2	5.925		
own, Pa. B2	59.00	Harrisburg, Pa. C5	6.50	Pittsburgh J5	5.925		
wanna, N.Y. B2	59.00	Houston S5	4.30	Seattle B3	6.675		
ll, Pa. U5	59.00	Ind. Harbor, Ind. I-2, Y1	3.90	So. Duquesne, Pa. U5	5.925		
ago, Ill. U5	59.00	Johnstown, Pa. B2	3.90	So. San Francisco B3	6.675		
quesne, Pa. U5	59.00	Phoenixville, Pa. F4	6.10	Struthers, O. Y1	6.425		
arbon, Forging (INT)		Lackawanna, N.Y. B2	3.90	Youngstown U5	5.925		
er, Pa. U5	\$70.50	Seattle B3	4.50				
R2	70.50	Minnequa, Colo. C10	4.70				
o, R2	70.50	Munhall, Pa. U5	3.90				
a, Pa. U5	70.50	Pittsburgh J5	3.90				
nd R2	70.50	Seattle B3	4.80				
hocken, Pa. A3	77.50	So. Chicago, Ill. U5, W14	3.85				
R7	73.50	So. Chicago, Ill. U5, W14	3.85				
Ala. T2	70.50	Stebenville, O. W10	3.90				
ld, Ala. T2	70.50	Welton, W.Va. W6	4.20				
a, Calif. K1	89.50	Youngstown R2, U5, Y1	3.90				
nd, U5	70.50	PLATES, Carbon A.R.					
utah, C11	70.50	Fontana, Calif. K1	5.70				
own, Pa. B2	70.50	Geneva, Utah C11	5.05				
wanna, N.Y. B2	70.50	PLATES, Wrought Iron					
geles B3	89.50	(Add 4.7% to base and					
ll, Pa. U5	70.50	extras)					
B3	89.50	Economy, Pa. B14	8.60				
cage, R2, U5, W14	70.50	H.S., L.A. Stand. Shapes					
quesne, Pa. U5	70.50	Alabamacity, Ala. R2	3.95				
Francisco B3	89.50	Aliquippa, Pa. J5	3.95				
Alloy, Forging (INT)		Bessemer, Ala. T2	3.90				
hem, Pa. B2	\$76.00	Bethlehem, Pa. B2	3.90				
R2	76.00	Clairton, Pa. U5	3.85				
o, R2	76.00	Fontana, Calif. K1	5.05				
a, Pa. T7	78.60	Gary, Ind. U5	3.90				
hocken, Pa. A3	83.00	Johnstown, Pa. B2	3.90				
R7	79.00	Lackawanna, N.Y. B2	5.80				
na, Calif. K1	95.00	Los Angeles B3	6.35				
nd, U5	76.00	Munhall, Pa. U5	3.90				
geles B3	96.00	Pittsburgh J5	3.95				
ll, Pa. R2	76.00	Seattle B3	6.30				
o, R2	76.00	So. Chicago, Ill. U5	3.85				
a, Pa. C18	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. J5	5.50				
Bethlehem, Pa. B2	5.50	Bethlehem, Pa. B2	5.80				
nd, Pa. U5	76.00	Lackawanna, N.Y. B2	5.80				
arbor, Ind. Y1	76.00	Los Angeles B3	4.65				
town, Pa. B2	76.00	Milton, Pa. B6	4.55				
wanna, N.Y. B2	76.00	Minnequa, Colo. C10	4.40				
geles B3	96.00	N. Tonawanda, N.Y. B11	3.95				
ll, Pa. R2	76.00	Pittsburgh Calif. C11	4.65				
o, R2	76.00	Pittsburgh J5	3.95				
a, Pa. U5	76.00	Seattle B3, N14	4.70				
ers, O. Y1	76.00	So. Chicago, Ill. U5	3.85				
m, O. C17	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y1	6.30				
nd, Pa. B2	76.00	H.S., L.A. Wide Flange					
All, Pa. U5	76.00	Aliquippa, Pa. B2	5.50				
Bethlehem, Pa. B2	5.50	Lackawanna, N.Y. B2	5.80				
nd, Pa. U5	76.00	Los Angeles B3	4.65				
geles B3	96.00	Milton, Pa. B6	4.55				
ll, Pa. R2	76.00	Minnequa, Colo. C10	4.40				
o, R2	76.00	N. Tonawanda, N.Y. B11	3.95				
a, Pa. U5	76.00	Pittsburgh Calif. C11	4.65				
ig, Pa. U5	76.00	Pittsburgh J5	3.95				
ates, O. Y1	76.00	Seattle B3, N14	4.70				
nd, Pa. U5	76.00	So. Chicago, Ill. U5	3.85				
So, Pa. U5	76.00	So. San Francisco B3	6.30				
BEARING PILES		Struthers, O. Y					

SHEETS, Cold-Rolled Steel (Commercial Quality)	BLACK PLATE (Base Box)	MANUFACTURING TERNES	N.Tonawanda, N.Y. B11.3.725	NewCastle, Pa. B4
Butler, Pa. A10 4.575	Albuquerque, N.M. J5 6.25	Fairfield, Ala. T2 7.85	Pittsburg, Calif. C11 4.475	NewCastle, Pa. (40) E5
Cleveland, J5, R2 4.575	Fairfield, Ala. T2 6.60	Gary, Ind. U5 7.75	Riviera, Ill. A1 3.725	NewHaven, Conn. D2
Boorse, Mich. G5 4.775	Gary, Ind. U5 6.60	Irvin, Pa. U5 7.75	SanFrancisco S7 5.00	NewHaven, Conn. A7
Fairfield, Ala. T2 4.575	GraniteCity, Ill. G4 6.70	Yorkville, O. W10 7.75	Seattle(25) B3 4.725	Pawtucket, R.I. R3
Pollard, W. Va. F4 5.575	Ind. Harbor, Ind. I-2, Y1 6.50	Yonkers, N.Y. W10 7.75	Sharon, Pa. S3 4.225	Riviera, Ill. (40) A1
Montana, Calif. K1 5.675	Irvin, Pa. U5 6.50	Yonkers, O. W10 8.65	Rome, N.Y. R2 4.225	Rome, N.Y. R2
Gary, Ind. U5 4.575	Pittsburg, Calif. C11 7.25	SHEETS, Lt. Coated Ternes, 6 lb (Commercial Quality)	Sharon, Pa. S3 4.225	Sharon, Pa. S3
GraniteCity, Ill. G4 5.275	SparsrowsPoint, Md. B2 6.60	Gary, Ind. U5 8.65	SparrowsPoint, Md. B2 3.725	SparrowsPoint, Md. B2
Ind. Harbor, Ind. I-2, Y1 4.575	SparsrowsPoint, Md. B2 6.60	Gary, Ind. U5 9.75	SparrowsPoint, Md. B2 4.475	Trenton, N.J. R5
Irvin, Pa. U5 4.575	Warren, O. R2 6.50	Yonkers, O. W10 9.75	Torrance, Calif. C11 4.475	Wallingford, Conn. W2
Lackawanna, N.Y. B2 4.575	Weirton, W. Va. W6 6.50	Yonkers, O. W10 9.75	Weirton, O. R2 3.725	Weirton, O. (40) T5
Middletown, O. A10 4.575	Yorkville, O. W10 6.50	SHEETS, Long Terne Steel (Commercial Quality)	Weirton, W. Va. W6 3.825	Weirton, O. R2
Pittsburg, Calif. C11 5.525	Yonkers, O. W10 6.30	BeechBottom, W. Va. W10 5.475	WestLeechburg, Pa. A4 3.975	Youngstown, C8 (40)
Pittsburgh, J5 4.575	HOLLOWARE ENAMELING	Gary, Ind. U5 5.475	Youngstown, O. Y1 3.725	Youngstown, Y1
Steubenville, O. W10 4.575	Black Plate (29 gauge)	Mansfield, O. B6 6.05	STRIP, Hot-Rolled Alloy	STRIP, Electro Galvanized
Warren, O. R2 4.575	Folansbee, W. Va. F4 6.10	Middletown, O. A10 5.475	Bridgeport, Conn. (10) S15.6.05	Dover, O. G6
Weirton, W. Va. W6 4.575	Gary, Ind. U5 6.10	Niles, O. N12 6.275	Carnegie, Pa. S18 6.45	Warren, O. T5
WestLeechburg, Pa. A4 5.45	GraniteCity, Ill. G4 6.30	Weirton, W. Va. W6 5.475	Fontana, Calif. K1 7.30	Weirton, W. Va. W6
Youngstown Y1 4.575	Ind. Harbor, Ind. I-2 6.10	SHEETS, Long Terne, Ingot Iron	Gary, Ind. U5 8.10	Youngstown, C8
	Irvin, Pa. U5 6.10	Middletown, O. A10 5.875	Houston, Tex. S5 6.50	
	Yorkville, O. W10 6.30	STRIP, Hot-Rolled Alloy	KansasCity, Mo. S5 6.70	STRIP, Cold-Rolled Alloy
SHEETS, Galv'd No. 10 Steel	SHEETS, Culvert Cu Cu	ROOFING SHORT TERNES	Midland, Pa. C18 5.85	Lidgeport, Conn. (10) S15
AlabamaCity, Ala. R2 5.075	No. 16 Alloy Fe	Gary, Ind. U5 9.75	NewBritain, Conn. (10) S15.6.05	Carnegie, Pa. S18
Ashland, Ky. (8) A10 5.075	Ashland, Ky. A10 5.875	Sharon, Pa. S3 6.45	Cleveland, A7	
Canton, O. R2 5.075	Canton, O. R2 5.925	STRIP, Hot-Rolled	Youngstown U5 6.10	Dover, O. G6
Delphos, O. N16 5.675	Fairfield, Ala. T2 5.875	High-Strength Low-Alloy	Fontana, Calif. K1 6.45	
Dover, O. R1 5.775	Gary, Ind. U5 6.125	Bessemer, Ala. T2 5.65	Anderson, Ind. (40) G6 5.50	Harrison, N.J. C18
Fairfield, Ala. T2 5.075	Ind. Harbor, I-2 5.875	Conshohocken, Pa. A3 5.90	Bridgeport, Conn. (10) S15.5.80	Midland, Pa. C18
Gary, Ind. U5 5.075	Irvin, Pa. U5 5.875	Ecorse, Mich. G5 6.30	Berlin, Pa. A10 5.10	NewBritain, Conn. (10) S15
GraniteCity, Ill. G4 5.50	Kokomo, Ind. C16 6.525	Fairfield, Ala. T2 5.65	Cleveland, J5, R1 5.10	Pawtucket, R.I. (12) N8
Ind. Harbor, Ind. I-2 5.075	MartinsFerry, O. W10 5.875	Gary, Ind. U5 5.65	Dearborn, Mich. D3 6.05	Sharon, Pa. S3
Irvin, Pa. U5 5.075	Pittsburg, Cal. C11 6.625	Ind. Harb., Ind. I-2 5.65	Detroit D2 5.60	Worcester, Mass. A7
Kokomo, Ind. (13) C16 5.475	SparsrowsPt. B2 5.875	Ind. Harbor, Ind. Y1 6.15	Detroit M1 5.42	Youngstown, C8
MartinsFerry, O. W10 5.075	Torrance, Cal. C11 6.625	Lackawanna, N.Y. B2 5.70	Dover, O. (40) G6 5.50	
Niles, O. N12 6.275	SHEETS, Culvert, No. 16	Seattle(25) B3 6.40	LosAngeles(25) B3 5.30	
Pittsburg, Calif. C11 5.825	Pure Iron	Sharon, Pa. S3 5.65	Follansbee, W. Va. F4 5.10	
SparsrowsPoint, Md. B2 5.075	Ashland, Ky. A10 6.125	So. SanFrancisco(25) B3 6.40	Fontana, Calif. K1 6.75	
Steubenville, O. W10 5.075	Cleveland R2 6.375	SparsrowsPoint, Md. B2 5.70	FranklinPark, Ill. (40) T6 5.35	
Weirton, W. Va. W6 5.075	Ind. Harbor, Ind. I-2 4.025	Warren, O. R2 5.65	Middletown, O. A10 5.10	
	Warren, O. R2 4.375	Weirton, W. Va. W6 6.10	NewBritain(10) S15 5.80	Youngstown, U5
SHEETS, Galvanized No. 10, High-Strength Low-Alloy	SHEETS, Hot-Rolled Ingot Iron	STRIP, Cold-Rolled Carbon	TIGHT COOPERAGE HOO	
Irvin, Pa. U5 7.625	18 Gage and Heavier	Anderson, Ind. (40) G6 5.50		
SparsrowsPoint (39) B2 7.775	Ashland, Ky. (8) A10 4.025	Bridgeport, Conn. (10) S15 5.80		
SHEETS, Galvanized Steel	Culvert, No. 16	Bristol, Conn. W1 7.65		
Canton, O. R2 5.625	Pure Iron	Carnegie, Pa. S18 6.45		
Irvin, Pa. U5 5.625	Ashland, Ky. A10 6.125	Cleveland A7 5.10		
Kokomo, Ind. (13) C16 6.025	Cleveland R2 6.375	Dearborn, Mich. D3 6.05		
Niles, O. N12 6.825	Ind. Harbor, Ind. I-2 4.025	Detroit D2 5.60		
SHEETS, ZINCGRIP Steel No. 10	SHEETS, Hot-Rolled Ingot Iron	Detroit M1 5.42		
Butler, Pa. A10 5.325	18 Gage and Heavier	FranklinPark, Ill. T6 5.45		
Middletown, O. A10 5.325	Ashland, Ky. (8) A10 4.025	Harrison, N.J. C18 5.50		
SHEETS, Electro Galvanized	Culvert, No. 16	Mattapan, Mass. T6 5.95		
Cleveland, R2 (28) 5.925	Pure Iron	Youngstown T1 6.15		
Niles, O. R2 (28) 5.925	Ashland, Ky. A10 5.075	Youngstown U5 5.65		
Weirton, W. Va. W6 5.775	Canton, O. R2 5.825	STRIP, Cold-Rolled Carbon		
SHEETS, Well Casing	Aluminum	Cleveland A7 5.10		
Fontana, Calif. K1 5.34	Butler, Pa. A10 5.575	Dearborn, Mich. D3 6.05		
BLUED Stock, 29 ga.	TIN PLATE, American 1.25 1.50	Detroit D2 5.45		
Yorkville, O. W10 7.00	Coke (Base Box) lb lb	FranklinPark, Ill. T6 5.45		
Follansbee, W. Va. F4 7.10	Spring Steel (Annealed)	Harrison, N.J. C18 5.50		
Follansbee (23) F4 6.425	Ind. Harbor, Ind. I-2 4.025	Mattapan, Mass. T6 5.95		
SHEETS, Enameling Iron	SHEETS, Cold-Rolled Ingot Iron	Ind. Harbor, Ind. Y1 5.34		
Ashland, Ky. (8) A10 4.925	Butler, Pa. A10 5.075	Lackawanna, N.Y. B2 5.70		
Cleveland R2 4.925	Middlebury, O. A10 5.075	Ind. Harbor, Ind. Y1 5.34		
Ind. Har. I-2, Y1 4.925	Warren, O. R2 5.173	Youngstown Y1 7.80		
Gary, Ind. U5 4.925	Youngstown Y1 5.173	STRIP, Cold-Rolled Carbon		
GraniteCity, Ill. G4 5.625	SHEETS, ZINCGRIP Ingot Iron	Ala. City, Ala. (27) R2 3.725		
Ind. Harbor, Ind. I-2 4.925	Butler, Pa. A10 5.575	Bridgeport, Conn. (10) S15 6.80		
Irvin, Pa. U5 4.925	Middlebury, O. A10 5.075	Bristol, Conn. W1 7.65		
Middletown, O. A10 4.925	Youngstown Y1 5.173	Carnegie, Pa. S18 6.45		
SHEETS, ZINCGRIP Ingot Iron	Aluminum	Cleveland A7 5.10		
Cleveland, R2 (28) 5.925	Butler, Pa. A10 5.575	Dearborn, Mich. D3 6.05		
Niles, O. R2 (28) 5.925	Middlebury, O. A10 5.075	Detroit D2 5.45		
Weirton, W. Va. W6 5.775	Youngstown Y1 5.173	FranklinPark, Ill. T6 5.45		
SHEETS, Well Casing	TIN PLATE, American 1.25 1.50	Harrison, N.J. C18 5.50		
Fontana, Calif. K1 5.34	Coke (Base Box) lb lb	Mattapan, Mass. T6 5.95		
BLUED Stock, 29 ga.	Spring Steel (Annealed)	NewBriton, Conn. (10) S15 6.80		
Yorkville, O. W10 7.00	Ind. Harbor, Ind. I-2 4.025	Youngstown C8 7.65		
Follansbee, W. Va. F4 7.10	Youngstown Y1 5.173	Spring Steel (Tempered)		
Follansbee (23) F4 6.425	Youngstown Y1 5.173	Trenton, N.J. R5 (29) 10.30		
SHEETS, Enameling Iron	Aluminum	Harrison, N.J. C18 6.80		
Ashland, Ky. (8) A10 4.925	Butler, Pa. A10 5.075	Ind. Harbor, Ind. I-2 4.025		
Cleveland R2 4.925	Gary, Ind. U5 8.70	Youngstown C8 7.65		
Ind. Har. I-2, Y1 4.925	Conshohocken, Pa. A3 4.125	Spring Steel (Tempered)		
Gary, Ind. U5 4.925	Irvin, Pa. U5 8.70	Trenton, N.J. R5 (29) 10.30		
GraniteCity, Ill. G4 5.625	Ecorse, Mich. G5 4.025	Harrison, N.J. C18 6.80		
Ind. Harbor, Ind. I-2 4.925	Pitts, Cal. C11 9.45	Ind. Harbor, Ind. I-2, Y1 3.725		
Irvin, Pa. U5 4.925	Sp. Pt. Md. B2 8.90	Youngstown C8 7.65		
Middletown, O. A10 4.925	Youngstown Y1 5.173	Spring Steel (Tempered)		
Youngstown Y1 4.925	Youngstown Y1 5.173	Trenton, N.J. R5 (29) 10.30		
TIN PLATE, Electrolytic (Base Box)	Aluminum	Youngstown C8 7.65		
AllAlqua, Pa. J5 7.40	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
Fairfield, Ala. T2 7.50	\$7.40 \$7.65 \$8.05	Youngstown C8 7.65		
Gary, Ind. U5 7.40	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
GraniteCity, Ill. G4 7.60	\$7.40 \$7.65 \$8.05	Youngstown C8 7.65		
IndianaHarbor, Ind. I-2, Y1 7.40	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
Irvin, Pa. U5 7.40	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
Niles, O. R2 7.40	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
Pittsburg, Calif. C11 8.15	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
SparsrowsPoint, Md. B2 7.50	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
Weirton, W. Va. W6 7.40	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
Yorkville, O. W10 7.40	0.25 lb 0.50 lb 0.75 lb	Youngstown C8 7.65		
SHEETS, SILICON, H.R. or C.R. (22 Ga.)	Arma-COILS (Cut lengths)	Key to Producers		
Transformer Grade	Field ture	A1 Acme Steel Co.		
BeechBottom W10 (cut lengths)	Electric Motor mo	A2 Alwood Steel Co.		
Brackenridge, Pa. A4 10.95	0.75 9.10 9.90	A3 Allegheny Ludlum Steel		
GraniteCity, Ill. G4 (cut lengths)	1.00 11.70 12.50	A4 American Steel & Wire		
IndianaHarbor, Ind. I-2 10.95	1.00 11.70 12.50	A5 Anchor Drawn Steel Co.		
Mansfield, O. E6 (cut lengths)	1.00 11.70 12.50	A6 Angell Nail & Chaplet		
7.20 7.55 7.85 (41) 8.00	1.00 11.70 12.50	A7 Armstrong Steel Corp.		
Niles, O. N12 (cut lengths) 7.05	1.00 11.70 12.50	A8 Calumet Steel Div.		
Vandergrift, Pa. U5 10.95	1.00 11.70 12.50	A9 Calstrip Steel Corp.		
Warren, O. R2 7.55	1.00 11.70 12.50	A10 Calumet Steel Corp.		
7.55 7.85 8.00 8.25	1.00 11.70 12.50	A11 Calumet Steel Co.		
Zanesville, O. A10 7.05	1.00 11.70 12.50	A12 American Cladmetals Co.		
	1.00 11.70 12.50	B1 Babcock & Wilcox Co.		
	1.00 11.70 12.50	B2 Bethlehem Steel Co.		
	1.00 11.70 12.50	B3 Beth. Pac. Coast Steel		
	1.00 11.70 12.50	B4 Blair Strip Steel Co.		
	1.00 11.70 12.50	B5 Bliss & Laughlin Inc.		
	1.00 11.70 12.50	B6 Boilardi Steel Corp.		
	1.00 11.70 12.50	B7 Babrahn Alloy Steel		
	1.00 11.70 12.50	B8 Buffalo Steel Co.		
	1.00 11.70 12.50	B9 Calumet Steel Co.		
	1.00 11.70 12.50	B10 Calumet Steel Co.		
	1.00 11.70 12.50	B11 Calumet Steel Co.		
	1.00 11.70 12.50	B12 Calumet Steel Co.		
	1.00 11.70 12.50	B13 Calumet Steel Co.		
	1.00 11.70 12.50	B14 A. M. Byers Co.		
	1.00 11.70 12.50	B15 A. M. Byers Co.		
	1.00 11.70 12.50	B16 Elliott Bros. Steel Co.		
	1.00 11.70 12.50	B17 Fairweather Steel Co.		
	1.00 11.70 12.50	B18 Crucible Steel Co.		
	1.00 11.70 12.50	B19 Cumberland Steel Co.		
	1.00 11.70 12.50	B20 Cuyahoga Steel & Wire		
	1.00 11.70 12.50	B21 Clayton Steel Corp.		
	1.00 11.70 12.50	B22 Claymont Steel Corp.		
	1.00 11.70 12.50	B23 Detroit Steel Corp.		
	1.00 11.70 12.50	B24 Dittson & Sons, Henry		
	1.00 11.70 12.50	B25 Driver Harris Co.		
	1.00 11.70 12.50	B26 Dickinson Weatherproof Nail Co.		
	1.00 11.70 12.50	B27 Eastern Gas & Fuel Assoc.		
	1.00 11.70 12.50	B28 Eastern Stainless Steel		
	1.00 11.70 12.50	B29 Electro Metallurgical Co.		
	1.00 11.70 12.50	B30 Elliott Bros. Steel Co.		
	1.00 11.70 12.50	B31 Keokuk Electro		
	1.00 11.70 12.50	B32 Keystone Drawn Steel		
	1.00 11.70 12.50	B33 Keystone Steel & Wire		
	1.00 11.70 12.50	B34 Laclede Steel Co.		
	1.00 11.70 12.50	B35 LaSalle Steel Co.		
	1.00 11.70 12.50	B36 Latrobe Steel Co.		
	1.00 11.70 12.50	B37 Lockhart Iron & Steel		
	1.00 11.7			

This pipe leads to better living



WESTERN builders are making possible better living for thousands of new home owners by installing radiant heating — much of it via Kaiser Steel pipe.

Radiant heating gives even, healthful temperatures in every room. It is exceptionally clean and safe. When Kaiser Steel pipe is used the grid system is so durable that it far outlasts the normal life of the house.

Steel pipe has become essential in nearly all modern construction — for plumbing, heating, ventilating, structural supports — even for TV antennae poles.

The diversified line of steel pipe and other steel products produced by Kaiser Steel means that the great western building industry has a nearby, dependable source to help meet its many needs.

It's good business to do business with



Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • tin plate • hot rolled strip • hot rolled alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-products
For details and specifications, write: **KAI SER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**

WELD STANDARD PIPE, T & C Carload discounts from list, %

inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/4	3
per Ft	8.5c	11.5c	17c	23c	27.5c	37c	58.5c	76.5c
per Ft	0.85	1.13	1.68	2.23	2.73	3.68	5.82	7.62
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5 (t)	32.5	15.25	35.5	18.25	38	20.75	38.5	21
Ill. L1 (t)	29.5	10.5	32.5	14.5	35	18	35.5	18.5
W. Va., W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5
A. N2 (t)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5
Calif. K1 (t)	19.5	0.25	22.5	4.25	25	7.75	25.5	7.5
Alb. Ind. Y1 (t)	31.5	14.25	34.5	18.25	37	21.75	37.5	21
O. N3 (*)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25
Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50
Pa. Pt. Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5
Own. Y1 (t)	32.5	15.25	35.5	19.25	38	22.75	38.5	21.25
Ind. Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	22.00
Own. R2 (t)	32.5	15.25	35.5	19.25	38	22.75	38.5	23.00

LESS STANDARD PIPE, T & C Carload discounts from list, %

inches	2	2 1/2	3	3 1/2	4	5	6	
per Ft	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	
per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18	
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5(t)	24	6	27	8.25	27	8.25	29	10.25
Pa., Pa. N2.	24	6	27	8.25	27	8.25	29	10.25
O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75
Town. Y1 (t)	24	7.50	27	9.25	27	9.25	29	11.25

RIC WELD STANDARD PIPE, T & C

town, R2 (t)	24	7.5	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16
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WELD STANDARD PIPE, T & C Carload discounts from list, %

inches	1/2	3/4	1	3 1/4	4	5	6	
per Ft	5.5c	6c	6c	92c	\$1.09	\$1.48	\$1.92	
per Ft	0.24	0.42	0.57	0.92	10.89	14.81	19.18	
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5(t)	24	6	27	8.25	27	8.25	29	10.25
Pa., Pa. N2.	24	6	27	8.25	27	8.25	29	10.25
O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75
Town. Y1 (t)	24	7.50	27	9.25	27	9.25	29	11.25
and, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.25

Size pipe discounts based on zinc price of: (t), 14c; (t), 12.50c; (\$), 14.50c; (*), 12c. These discounts adjusted depending on price of zinc at time of shipment.

STEELS

Its per pound; add 4.7% to base price and extras)

Plates	Sheets		1/4-in. diam. & larger		N.F. thread, all diams.		STEEL STOVE BOLTS		HEXAGON CAP SCREWS		STEEL	
Carbon	Base	Carbon	Base	Copper	Base	Both Sides	(F.O.B. plant, per cent off list in packages)	Plain finish	.....48 & 10	(1020 steel; packaged; per cent off list)	STEEL STOVE BOLTS	HEXAGON CAP SCREWS
10% is	10% 10%	20% 20%	20% 20%	77.00	77.00	77.00						
25.00	29.50	19.75	26.24	27.50	27.50	27.50						
30.50	35.00	24.50	27.50	27.77	27.77	27.77						
36.50	41.00	30.5	35.25	35.5	35.5	35.5						
29.50	34.00	26.00	35.92	36.50	36.50	36.50						
34.50	39.00	33.50	38.00	38.00	38.00	38.00						
26.50	31.00	23.00	33.00	33.00	33.00	33.00						
27.50	32.00	24.00	33.50	33.83	33.83	33.83						
21.25	27.75	21.25	27.75	27.75	27.75	27.75						
20.75	27.25	20.75	27.25	27.25	27.25	27.25						
33.55	45.15	31.50	45.15	45.15	45.15	45.15						
41.23	54.18	34.93	54.18	54.18	54.18	54.18						
46.28		44.00										

STAINLESS STEEL

(Add 4.7% on base price and extras)												
(Add 4.7% on base price and extras)												
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5(t)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15
Pa., Pa. N2.	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15
O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75	20	14.75	33.75	19.5
Town. Y1 (t)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16
and, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.25	33	15.25	34.00	16

inches	1/2	3/4	1	3 1/4	4	5	6	
per Ft	5.5c	6c	6c	92c	\$1.09	\$1.48	\$1.92	
per Ft	0.24	0.42	0.57	0.92	10.89	14.81	19.18	
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5(t)	24	6	27	8.25	27	8.25	29	10.25
Pa., Pa. N2.	24	6	27	8.25	27	8.25	29	10.25
O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75
Town. Y1 (t)	24	7.50	27	9.25	27	9.25	29	11.25
and, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.25

inches	1/2	3/4	1	3 1/4	4	5	6	
per Ft	5.5c	6c	6c	92c	\$1.09	\$1.48	\$1.92	
per Ft	0.24	0.42	0.57	0.92	10.89	14.81	19.18	
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5(t)	24	6	27	8.25	27	8.25	29	10.25
Pa., Pa. N2.	24	6	27	8.25	27	8.25	29	10.25
O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75
Town. Y1 (t)	24	7.50	27	9.25	27	9.25	29	11.25
and, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.25

inches	1/2	3/4	1	3 1/4	4	5	6	
per Ft	5.5c	6c	6c	92c	\$1.09	\$1.48	\$1.92	
per Ft	0.24	0.42	0.57	0.92	10.89	14.81	19.18	
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5(t)	24	6	27	8.25	27	8.25	29	10.25
Pa., Pa. N2.	24	6	27	8.25	27	8.25	29	10.25
O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75
Town. Y1 (t)	24	7.50	27	9.25	27	9.25	29	11.25
and, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.25

inches	1/2	3/4	1	3 1/4	4	5	6	
per Ft	5.5c	6c	6c	92c	\$1.09	\$1.48	\$1.92	
per Ft	0.24	0.42	0.57	0.92	10.89	14.81	19.18	
Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk	Galv	Bulk
Pa., Pa. J5(t)	24	6	27	8.25	27	8.25	29	10.25
Pa., Pa. N2.	24	6	27	8.25	27	8.25	29	10.25
O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75
Town. Y1 (t)	24	7.50	27	9.25	27	9.25	29	11.25
and, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.25

| inches | 1/2 | 3/4 | 1 | 3 1/4 |
<th
| --- | --- | --- | --- | --- |

Even a Boy can fight Communism with Truth



Kids on Radio Free Europe Send Hope To Pals Behind Iron Curtain

Twelve-year-old Karel Paces, a young Czech found in a German refugee camp, is broadcasting over Radio Free Europe to his Czech friends behind the Iron Curtain.

He is telling them familiar children's stories in their native tongue—stories now denied them by their Communist masters. These stories have a very real meaning to Karel's friends, a meaning ingrained in the folklore of their country.

Karel Paces is giving his friends, the boys and girls of his beloved Czechoslovakia, the truth of their own country and the free world. It is this truth which every American must support now so

that it can be used to fight the deceit, darkness and despair which Communist tyranny is spreading through the satellite countries of Europe.

Day and night, Radio Free Europe is exposing Communist lies and propaganda, and sustaining the hope of oppressed millions that some day they will live in a better world.

At least \$4,000,000 is needed this year to support and expand the operations of Radio Free Europe and Radio Free Asia. In addition, the Crusade for Freedom is seeking the signatures of Americans, on Freedom-Grams. These will be your personal pledges of hope for a free world.

This Crusade cannot succeed without your help. Your contribution is needed now to help support Radio Free Europe and Radio Free Asia... to help fight lies with truth and to win the cold war.

Support this truth campaign now... help bring to millions the promise of future freedom.

*Send your contribution to
Crusade for Freedom,
c/o your local Postmaster*



**Help Truth Fight Communism
Give To Crusade For Freedom**



Contributed in the public interest by

STEEL

The Weekly Magazine of Metalworking

WAREHOUSE STEEL PRODUCTS

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

SHEETS			STRIP			BARS			Standard Structural Shapes		PLATES	
H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy	41401†§	Carbon	Floor		
5.81	7.17	8.37	6.42	...	6.41	7.42	11.17	6.47	6.47	7.70		
6.51	7.36	8.54	6.55	...	6.42	7.49	11.18	6.56	6.75	7.98		
5.80	6.65	8.41	6.21	...	5.90	6.95	11.07	6.08	6.30	7.67		
5.80	6.65	7.70	5.80	...	5.80	8.65	...	5.95	6.10	8.65		
5.80	6.65	8.00	5.83	...	5.83	6.80	10.65	5.95	5.95	7.18		
6.13	6.72	8.47	6.14	...	6.13	7.16	11.07	6.42	6.47	7.60		
5.80	6.65	8.14	6.00	...	5.89	6.90	10.79	6.28	6.12	7.51		
6.07	6.92	8.64	6.13	7.70	6.12	7.10	10.92	6.42	6.47	7.52		
6.74	...	8.72	6.89	...	6.98	...	...	6.82	6.78	8.16	
6.35	7.27	8.47	6.75	...	6.59	7.78	9.54	6.39	6.60	8.01		
6.60	8.45	9.60	6.75	11.20	6.60	8.60	12.05	6.60	6.65	8.90		
5.97	6.82	8.17	6.00	...	6.00	7.07	10.82	6.12	6.12	7.35		
6.16	7.00	8.35	6.19	...	6.18	6.91	...	6.30	6.30	...		
6.62	7.41	8.63	6.72	...	6.79	7.57	...	6.70	6.78	7.18		
6.26	7.27	8.42	6.56	...	6.59	7.53	11.04	6.39	6.60	8.01		
7.60	...	...	...	...	6.44	8.70	...	7.25	6.64	7.33	
6.11	7.13	8.30	6.45	8.30	6.42	7.45	10.79	6.17	6.24	7.36		
5.80	6.65	8.00	5.94	...	5.83	6.90	10.65	5.95	5.95	7.18		
6.14	6.95	8.63	6.53	...	6.30	7.63	...	6.58	6.68	7.80		
6.10	6.94	8.00	6.14	...	6.13	7.20	10.95	6.35	6.35	7.58		
6.47	7.31	8.66	6.50	...	6.49	7.32	...	6.61	6.61	7.84		
6.90	8.20	9.60	6.75	...	6.65	8.65	12.05	6.50	6.75	8.90		
7.36	8.24	9.70	7.45	...	7.13	9.62	11.90	6.87	7.25	9.11		
7.80	9.23	...	7.65	...	7.10	9.50	11.90	7.00	7.05	9.10		
6.31	7.61	8.90	6.89	...	6.90	8.03	...	6.93	6.95	8.17		

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-strip, 2000 lb and over; cold-finished bars, 2000 lb and over; †—500 to 1499 lb; §—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

ton, 51% (natural), lower lake ports.
C. Bessemer \$9.45
C. Bessemer 9.30
C. Bessemer 9.20
C. Bessemer 9.05
Phosphorus 9.05
Adjustment for analysis, prices will be
red or decreased as the case may be for
es or decreases after Dec. 1, 1950, in
ible lake vessel rates, upper lake rail
s, dock handling charges and taxes
1.

Eastern Local Iron Ore

Cents per unit del. E. Pa.
C. and basic 56-62% concentrates
act 17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports
in basic, 60 to 65%:

nom.

Long-term contract 24.00

African hematites (spot) 26.00-28.00

Iron ore, 67-69% (spot) 32.00

Tungsten Ore
Net ton unit, duty paid
a wolframite and scheelite, per
ton unit \$65.00

tic scheelite, mines 65.00

Manganese Ore
anese, 48% nearby, \$1.18-\$1.22 per long
unit, c.i.f. U. S. S. ports, duty for buyer's
it; shipments against old contracts for
re are being received from some sources
-87c.

Chrome Ore
ton, f.o.b. cars, New York, Philadelphia-
Baltimore, Charleston, S. C., plus ocean
differential for delivery to Portland,
or Tacoma, Wash.

Indian and African
2.8:1 \$39.00-\$42.00
1:1 ratio 44.00-45.00
no ratio 30.00-32.00

South African Transvaal
no ratio \$27.00-\$28.00
no ratio 34.00-35.00

Brazilian nom.

Domestic
(Rail nearest seller)
3:1 \$39.00

Molybdenum
ide concentrates per lb, molyb-
um content, mines \$1.00

REFRACTORIES

(Ceiling prices, effective Sept. 23, 1952,
per 1000 units)

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., \$89.00; Ash-
land, Grahn, Hayward, Hitchins, Haldeman,
Olive Hill, Ky., Athens, Troup, Tex., Beech
Creek, Clearfield, Curwensville, Lochhaven,
Lumber, Orville, West Decatur, Pa., Besse-
mer, Ala., Farber, Mexico, St. Louis, Van-
dalia, Mo., Ironton, Oak Hill, Parral, Ports-
mouth, O., Ottawa, Ill., Stevens Pottery, Ga.,
Woodbridge, N. J., \$99.30; Salina, Pa.,
\$104.55; Niles, O., \$109; Los Angeles, Pitts-
burgh, Calif., \$132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union,
Sproul, Pa., Ensley, Ala., Portsmouth, O.,
\$99.30; Hays, Pa., \$105.10; Niles, O., \$107; E.
Chicago, Ind., Joliet, Rockdale, Ill., \$109.70;
Cutler, Utah, \$116.55; Los Angeles, \$122.85.

Insulating Fire Brick

2300° F: Massillon, O., \$178.50; Clearfield, Pa.,
\$179.55; Augusta, Ga., Beaver Falls, Zell-
enopple, Pa., Mexico, Mo., \$186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., \$64.60; Alsey,
Ill., Chester, New Cumberland, W. Va., Free-
port, Johnstown, Merrill Station, Pa., Wells-
ville, O., \$69.30; Mexico, Mo., \$73.50; Clear-
field, Pa., Portsmouth, O., \$63; Perla, Ark.,
\$92.40; Los Angeles, \$110.25; Pittsburgh, Calif.,
\$111.30.

Stove

Reedsdale, Pa., \$127; Johnstown, Pa., \$127.30;
Clearfield, Pa., \$135; St. Louis, \$138; Athens,
Tex., \$140.90.

Nozzles

Reedsdale, Pa., \$203.20; Johnstown, Pa.,
\$208.40; Clearfield, Pa., \$219.45; St. Louis,
\$224.65; Athens, Tex., \$225.20.

Bummers

Reedsdale, Pa., \$158.20; Johnstown, Pa.,
\$161.70; Clearfield, Pa., \$168.60; St. Louis,
\$170.30; Athens, Tex., \$174.40.

High-Alumina Brick

50 Per Cent: Clearfield, Pa., St. Louis, Mex-
ico, Mo., \$163.30; Danville, Ill., \$169.30.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo.,
\$210.20; Danville, Ill., \$213.20.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo.,
\$244.85; Danville, Ill., \$247.85; Clearfield, Pa.,
\$252.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn
14-18% and Si 53-59%). Contract, carload,
lump, bulk 20.0c per lb of alloy, carload
packed 20.8c, ton lot 22.8c, less ton 23.3c.
Delivered, Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe
1.50-3%). Contract, carload, lump, bulk 10.0c
per lb of alloy, carload packed 20.2c, ton
lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-
43%, Fe 40-45%, C 0.20% max.). Contract,
c.l. lump, bulk 7.0c per lb of alloy, c.l.
packed 7.75c, ton lot 8.5c, less ton 9.35c.
Delivered, Spot add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-
52%, Fe 8-12%, C 0.50% max.). Contract,
carload, lump, packed 20.25c per lb of alloy,
ton lot 21c, less ton 22.25c. Freight allowed.
Spot add 0.25c.

Chromium Briquets: (Weighing approx. 3% lb
each and containing exactly 2 lb of Cr). Con-
tract, carload, bulk 14.50c per lb of briquet,
carload packed 15.2c, ton 16.0c, less ton 16.9c.
Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx.
3 lb and containing exactly 2 lb of Mn). Con-
tract, carload, bulk 12.45c per lb of briquet,
c.l. packaged 13.25c, ton 14.05c, less ton
14.95c. Delivered, Add 0.25c for notching.
Spot add 0.25c.

Silicomanganese Briquets: (Weighing approx.
3 1/2 lb and containing exactly 2 lb of Mn and
approx. 1/2 lb of Si). Contract, c.l. bulk
12.65c, per lb of briquet, c.l. packed 13.45c,
ton lot 14.25c, less ton 15.15c. Delivered, Add
0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx.
5 lb and containing exactly 2 lb of Si). Con-
tract, carload, bulk 6.95c per lb of briquet,
c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c.
Delivered, Spot, add 0.25c.

(Small size—weighing approx. 2 1/2 lb and con-
taining exactly 1 lb of Si). Carload, bulk
7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton
9.6c. Delivered. Add 0.25c for notching,
small size only. Spot, add 0.25c.

Molybdenum-Oxide Briquets: (Containing 2 1/2 lb
of Mo each) \$1.14 per pound of Mo contained,
f.o.b. Langholt, Pa.

Note: Current prices on chromium, silicon,
vanadium, boron and tungsten alloys appeared
on page 105, Jan. 12 issue; manganese and
titanium alloys and "other" ferroalloys, page
127, Jan. 19.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Jan. 22	\$43.00
Jan. 15	43.00
Dec. 1952	43.00
Jan. 1952	43.00
Jan. 1948	40.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1 No. 1 No. 1
Bundles Heavy Dealer, Melt
Indus- trial Rail-
Basing Point road

Alabama City, Ala.	\$39.00	\$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middleton, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburgh, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades		
2. No. 1 Busheling	Base	
3. No. 1 Heavy Melting	\$1.00	
4. No. 2 Heavy Melting	-1.00	
5. No. 2 Bundles	-1.00	
6. Machine Shop Turnings	-10.00	
7. Mixed Borings and Short Turnings	-6.00	
8. Shoveling Turnings	-6.00	
9. No. 2 Busheling	-4.00	
10. Cast Iron Borings	-6.00	

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge		
Crops	7.50	
12. Bar Crops & Plate	5.00	
13. Cast Steel	5.00	
14. Punchings & Plate Scrap	2.50	
15. Electric Furnace Bundles	2.00	

Cut Structural & Plate:

16. 3 feet and under	+\$ 3.00
17. 2 feet and under	+\$ 5.00
18. 1 foot and under	+\$ 6.00
19. Bridget Cast Iron Borings	Base

20. 2 feet and under	Base
21. 1 foot and under	+\$ 2.00
22. Springs and Crankshafts	+\$ 1.00
23. Alloy Free Turnings	-\$ 3.00

24. Heavy Turnings	-\$ 1.00
25. Bridget Turnings	Base
26. No. 1 Chemical Borings	-\$ 3.00
27. No. 2 Chemical Borings	-4.00
28. Wrought Iron	+\$ 10.00
29. Shafting	+\$ 10.00
30. Old Tin & Terne Plated Bundles	-\$ 10.00

31. Unprepared Grades	
When compressed constitutes:	
32. No. 1 Bundles	-\$ 6.00
33. No. 2 Bundles	-\$ 9.00
34. Other than material suitable for hydraulic compression	-\$ 8.00

24. Heavy Turnings	-\$ 1.00
25. Bridget Turnings	Base
26. No. 1 Chemical Borings	-\$ 3.00
27. No. 2 Chemical Borings	-4.00
28. Wrought Iron	+\$ 10.00
29. Shafting	+\$ 10.00
30. Old Tin & Terne Plated Bundles	-\$ 10.00

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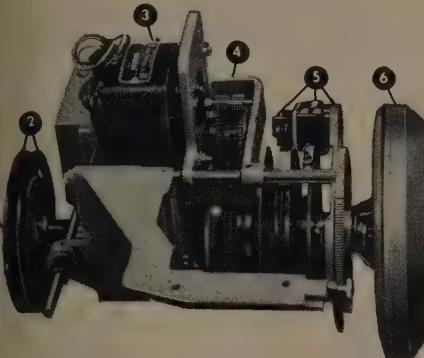
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34. Other than material suitable for hydraulic compression	-\$ 8.00

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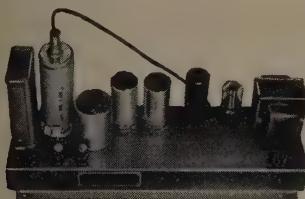
32. No. 1 Bundles	-\$ 6.00
33. No. 2 Bundles	-\$ 9.00
34. Other than material suitable for hydraulic compression	-\$ 8.00

When compressed constitutes:</

1. Center line of slidewire and shaft
2. Control cams
3. Balancing motor
4. Spring-loaded no-backlash drive
5. Control slidewires
6. Measuring slide-wire



This partially dis-assembled view of Speedomax shows its two-phase Balancing Motor and gears, with a typically "heavy" load of slidewires and contacting cams for signal and control devices. Several more cams, etc., can be added if necessary; only practical limit is physical space on shaft. Smoothness in operating many contacts is an outstanding Speedomax ability.



Amplifier which feeds the Speedomax balancing motor the controlling half of its power. Torque gradient is especially high where needed most—around balance point—for prompt, positive balancing. This Amplifier leads its field by large margins in sensitivity and in power output.

Good circuit engineering shows in this Slidewire's non-inductive wiring and in the absence of any flexible leads which might form inductive loops.



CAREER OPPORTUNITIES AT L&N

Expansion program of this long-established firm has many features to attract outstanding recent graduates in engineering and science. Opportunities are in sales field engineering, product and application engineering, research, advertising, market development. Widely-respected policies assure recognition of progress and achievement. Address Personnel Manager for preliminary interview at nearest of 17 L&N offices.

POWER IS PERFORMANCE

... and Speedomax Instruments lead with "huge" 12-watt balancing motors!



- Power underlies good performance, in instruments as in automobiles, machine tools or rolling mills. That's why L&N engineers insist that an automatic instrument should operate as positively and promptly as any other high-grade machine.

Even the first null balance potentiometer Recorder we built, back in 1911, which went to a steel mill, had a 110-volt motor instead of a spring drive to run its balancing mechanism, chart and signalling contacts. And, while its pioneering of balance-method measurement attracted the most attention, its ample power certainly helped establish L&N Recorders as the coming idea in process Instrumentation.

Power has done the same for Speedomax instruments. Twenty years ago, Speedomax pioneered the electronic idea of measurement—in a husky, powerful piece of equipment. Today's models have from 2 to 4 times more power in their balancing motors than any other current models of electronic controllers, recorders or indicators.

This power means superior performance in both load-carrying and speed. Load-carrying ability applies especially when the motor operates, in addition, an unusual number of contact devices. But even the most usual Speedomax jobs—automatic control, for instance—can call on the instrument's power for high operating speed in handling the normal number of control devices. The strong, wide-faced, rigidly-mounted cams and gears so typical of Speedomax instruments start moving instantly, move rapidly and stop dead still without coast. Signalling and control action is correspondingly crisp and precise.

Speedomax for industrial use is described in Catalog ND46(1); additional information for unusual applications is given in Technical Publication ND46(1). Either will be sent on request by our nearest office or from 4957 Stenton Ave., Philadelphia 44, Pa.

LEEDS & NORTHRUP
instruments • automatic controls • furnaces

Get the facts straight about

TIN

Tin is vital to the free world . . . indispensable to this nation's health, industrial progress, transportation, communications, standard of living, and security.

Tinplate, for example, is strong, can be soldered easily, can be lacquered and lithographed beautifully, and is absolutely nontoxic. In solder, tin wets metals readily, flows easily, and seals sound joints. Tin resists corrosion, too, and is highly malleable.

Yet we continue to seek substitutes for tin . . . continue to strive for that elusive something "just as good."

WHY?

Does it make sense to try to replace one of

the most economical production metals known to industry?

Does it make sense when Malaya, the world's largest tin producer and one of the free world's staunchest allies, stands ready to supply tin on a free market for whatever the demands of American industry may be?

It is the purpose of this Bureau to furnish accurate information about tin to American industry, and to promote a clearer understanding between the United States and Malaya.

One of the media used to accomplish this is a monthly newsletter. We'd like to send "Tin News" to you regularly, and with our compliments. All you need do is tell us you'd like to get it.

THE MALAYAN TIN BUREAU

Department 321

1028 Connecticut Avenue, Washington 6, D.C.

THERE IS NO REAL SUBSTITUTE FOR TIN

MALAYAN



The Metal Market

Metals price changes in first few weeks of 1953 exceed last year's rate. Supplies continue to move into balance with demand quicker than Washington indicates

I of price changes hasn't run its course, but it is now past its stage. Price movements in the few weeks of 1953 are several times the rate of last year, with aluminum, nickel, silver and cadmium going up; lead, zinc and mercury going down.

Supply of most metals is moving in balance with demand more rapidly than Washington actions and movements indicate. No one suffers greatly from metal shortages today, the situation will improve with the passing month. The promise of CMP allotments of metals for civilian goods in the second quarter will probably be broadened considerably.

Outlook in Aluminum—Outlook for aluminum is brightening considerably as return to production of nearly all smelters in the Northwest that depend on hydroelectric power. If a now-in-the-works—for borrowing more Canadian aluminum from the U.S. goes through, the transition of the next three months will be smoothed appreciably. The loan proposed would be for about 100 tons.

American producers and fabricators of aluminum got their expected price increase from OPS last week. Primary metal was allowed a half-cent increase, mill products a 4 per cent per ceiling. Increases will be based on automatically to users of aluminum.

Upper Caution—NPA continues to insist that copper controls will be lifted after June 30, but the industry disagrees sharply, saying price control will bring a marked improvement in supply. Already producers poised for the release of price lists, orders are priced as of delivery date rather than as of book-date. OPS expects a 5-9 cent increase in copper when controls are lifted.

Consumers are getting plenty of copper these days, no matter what price. December deliveries were the best for any month in nearly five years. Imports that month totaled about 60,000 tons, says NPA, and January promises to hold at about that level. February imports are estimated at 55,000 tons. Import duty is suspended until June 30, 1954, in

the first bill passed by the new Congress.

Upholds Aluminum Industry

The U. S. aluminum industry isn't the monster some government agencies think it is, says a report of the Joint Committee on Defense Production.

While aluminum prices are substantially the same as they were in 1939, capacity has increased almost ten times. The committee also found nothing inherently wrong with integrated production, a factor largely responsible for the steel industry's growth. An increasing share of total new supply has been made available to nonintegrated fabricators, the group found, and it could see no reason for defense agencies to place creation of new competition ahead of other considerations in planning future programs for aluminum.

National Lead Will Appeal

National Lead Co., New York, plans to appeal the recent decision of the Federal Trade Commission holding that the company violated the law by its methods of selling lead pigments. The decision also affects six other companies.

Company officials believe there was no evidence to justify the conclusions of the majority members. Furthermore, they feel that certain terms of the order exceed the authority of the commission. The company points to the vigorous dissenting opinion of Commissioner Lowell B. Mason, the only present member who heard both oral arguments before the commission.

RFC Buys Bolivian Tin

Three months' production of Bolivia's tin mines will be bought by RFC for refining at the government-owned Texas City, Tex., smelter. Concentrates containing about 5000 long tons of tin, most of it dug since Bolivia nationalized her tin mines, are covered. Price is \$1.175 per pound, f.o.b. South American ports. The U. S. State Department, which had insisted on compensating American

stockholders in the mines before a deal could be negotiated, evidently O.K.'d the transaction.

Another private trader has joined the fight against RFC selling tin to industry, saying the metal should be taken off its "political pedestal." Citing ex-President Truman's estimate that the government would lose about \$2 million from tin operations in fiscal 1954, the company underlined the fact that the country has enough metal immediately stockpiled (\$600 million worth) to wage a 4½-year war, and pointed out that consumption today is only about 70 per cent of production. Tin futures today are offered at about 2 cents below RFC spot price. Free world tin production in 1952 is estimated by the Malayan Tin Bureau at or slightly better than the 1951 total of 162,076 tons. Only 32,500 tons of this comes from the Western Hemisphere.

Silver Usage Shifts

Less than one-half of last year's silver consumption went into silverware, while five years ago the proportion was about two-thirds. That significant change was reported by Handy & Harman in its annual review of the silver industry. Industrial users now account for a major part of the silver market, the report states. Last year, use of the metal declined about 14 per cent to 95 million ounces, and the price ranged from a high of 88 cents to a low of 82.75 cents. The metal has been exceedingly active pricewise in 1953, advancing four times to the present level of 85.25 cents.

Slab Zinc Output Rises

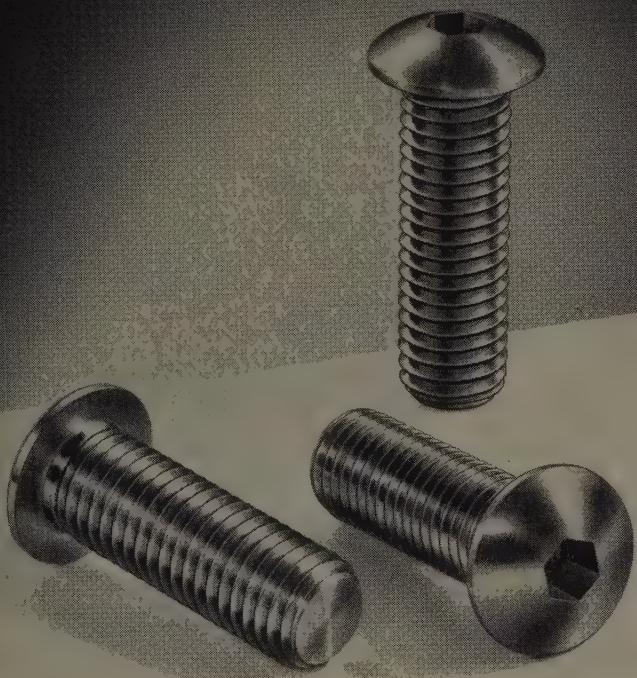
Slab zinc production of 961,200 tons in 1952 by United States smelters exceeded the 1951 output by about 3 per cent and came near the all-time record set in 1943.

Shipments of slab zinc from these smelters, however, totaled 896,114 tons in 1952, a 2.5 per cent decline from 1951.

In reporting these figures, the American Zinc Institute Inc. points out that the steel strike's effect on shipments spoiled the chance to equal the record performance of 1950.

Exports were 33-1/3 per cent higher, and shipments for government account were about 9 per cent lower than in 1951.

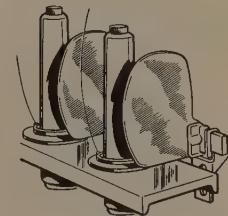
Our Fiftieth Year
A START FOR THE FUTURE



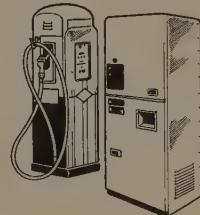
UNBRAKO BUTTON HEAD SOCKET SCREWS feature the wing: threads to head; low head height; nonslip wrenching; hex socket that minimizes possibility of marred or mutilated heads; fully formed threads—Class 3 fit; heat treated alloy steel; standard sizes from #8 through $\frac{5}{8}$ " diameter.



USE UNBRAKO BUTTON HEAD SCREWS on transportation equipment—door and window frames, paneling, seats.



On textile machinery—slingers, twisters, bobbin shields.



On sheet metal assemblies—beverage coolers, gasoline pumps.

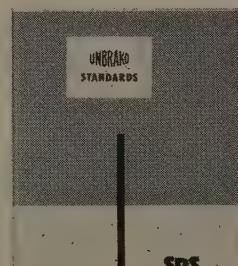
Have you checked our UNBRAKO standards?

We suggest you do, because a standard UNBRAKO delivered from your distributor's stock means faster and better service. A standard will do the job as well as a special at much lower cost. For details about UNBRAKO Standards, write SPS, Jenkintown 33, Pa.

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SOCKET SCREW DIVISION

SPS
JENKINTOWN PENNSYLVANIA



Write for UNBRAKO Standards

Wire . . .

Wire Prices, Page 111

Boston — Orders against supplemental allotments for some wire products have tightened first quarter schedules. Openings are difficult to find for more bright manufacturers wire. Buying for second quarter is somewhat slow. Demand for cold-heading wire has slackened in spots, but is still in production to the extent of semifinished capacity for that grade. Orders for upholstery spring wire are heavy. Most mills are behind schedule and under pressure for shipment. Mechanical spring requirements are not impressive and more music wire is available for stock shipments. Galvanized wire is inclined to drag.

Sheets, Strip . . .

Sheet and Strip Prices, Page 109 & 110

Cleveland — Except for hot-dipped galvanized sheets, there isn't any sign of easing demand in the light, flat-rolled steel market. Galvanized sheets are moving at a slower pace seasonally, but the further fact that substantial addition to galvanized capacity has come into production in recent weeks also is seen as a factor bearing on overall demand. Hot and cold-rolled sheets are extremely tight and expectations now are there will be little relief before late in the year, if then. Producers are booking tonnage for second quarter where openings in schedules permit, but some plants are so fully occupied with carryover and rated tonnage, opening of books for the second quarter was little more than a formality.

Boston — Automotive suppliers are under heaviest pressure for delivery on parts and in all cases are having trouble obtaining steel. Strong demand is developing for 430 series of stainless. Some producers are back on voluntary allocation, being sold into June.

New York — Although there is not the pressure for galvanized sheets that there is for hot and cold-rolled carbon, there is still a substantial movement and most sellers anticipate a pickup as the spring building season approaches. Most direct consumers of galvanized sheets assert they do not find it easy to obtain tonnage from the mills. Warehouse stocks are better, due in part to the fact mills are under quota obligations to distributors and also the fact needs of consumers are not sufficiently strong to warrant buyers in paying warehouse premiums in most cases.

Pittsburgh — Strong demand for cold-rolled sheets may result in some carryover to third quarter.

Philadelphia — Pressure for hot and cold-rolled sheets for commercial consumption is as strong as at any time in months. Most mills are booked solidly as far ahead as they care to commit themselves. Producers are taking all the business they care to schedule at the moment, moving on a selective basis. Certain sellers are booking only on a month-to-month basis, with most opening their books this week for

May. A leading seller virtually blanked out April in an effort to become more current.

Los Angeles — Order carryover of most steel products including flat-rolled is expected to be worked off by district steelmakers according to this schedule: Bethlehem, Pacific Coast Steel Corp., by end of February; Columbia-Geneva Division, U. S. Steel Corp., early February; Kaiser Steel Corp., early April.

Steel Bars . . .

Bar Prices, Page 109

Boston — Demand for carbon and alloy bars for armament accounts for substantial volume. Numerous first quarter commercial tickets are not being converted to orders. Limited openings point toward large carryovers despite cautious scheduling beyond defense requirements.

New York — Hot carbon bar sellers, who have not opened their books on non-defense work for the entire second quarter but rather are doing so on a month-to-month basis, are taking action this week for May.

Philadelphia — Small rounds in hot carbon and large rounds in cold alloy appear to be the only relatively easy spots in bars. Otherwise, the bar supply situation seems to be as tight as a drum.

Pittsburgh — Large diameter bars continue in critical supply with no easing in demand in early prospect.

Cleveland — Not much change in supply conditions in the large size carbon and alloy bars is expected soon. Military and high-rated defense demands continue to press on the market with the result regular commercial requirements are going unsatisfied. Small sizes are fairly plentiful.

Plates . . .

Plate Prices, Page 109

New York — Local shipyards and other fabricators of plates, particularly those requiring heavier gages, are having difficulty obtaining tonnage in sufficient volume to meet needs. Only in strip plate do shipments appear to be fairly adequate and even in this material it is difficult now to place new orders for delivery much before May.

Boston — Floor plates excepted, deliveries are more extended on specialties. Difficulty centers largely in obtaining cladding material, notably nickel-bearing stainless. Demand for sheared carbon plates is in excess of supply and is piling up against an expected carryover, larger than indicated earlier with most mills.

Philadelphia — Some plate mills, booking on a month-to-month basis, are opening books this week for May on non-defense tonnage. They are fairly swamped with applications, and prospects are schedules will be filled quickly.

Pittsburgh — Steel plate consumers' inventories are unbalanced. One tank builder is slowed down by lack of smaller gage plates for tank bottoms.

Seattle — Plates continue scarce although supply conditions are reported improved in some quarters. Several important jobs, involving

tanks for storage at air fields, a for the Atomic Energy Commission are up for early action.

Birmingham — District plate mill order books are filled for second quarter. Military demand is supplemented by needs of the area's manufacturing plant.

Tubular Goods . . .

Tubular Goods Prices, Page 113

New York — Reflecting the recent decrease in the price of zinc, United States Steel Export Co. has revised export base prices as follows, with freight included to New York, Philadelphia and Baltimore, effective with shipments from producing mills Jan. 15: Standard p. t. & c., galvanized butt-weld, 2½ and 3-inch, 17.15 per cent discount; galvanized seamless, 2-inch, 1.90 per cent discount; 2½ and 3-inch, 35 per cent discount; 3½ and 4-inch, 5.65 per cent discount, and 5 and 6-inch, 10.50 per cent discount; English gas tubes, galvanized butt-weld, 2½ and 3-inch, 19.05 per cent discount; galvanized plain wire, \$67 per 100 pounds.

New York — While few distributors of merchant pipe are holding up mill shipments, there is a seasonal lag in demand from the building trade. As spring approaches, however, this situation should change and it is for this reason jobbers generally are laying in all the tonnages offered.

Boston — Only a handful of pipe distributors trimmed off butt-weld tonnage from March allotments as the volume involved is slight. Jobber stocks of this grade are generally balanced, but most are reluctant to turn down tonnage, fearing loss of position on mill books. Direct shipments of butt-weld are said to be through second quarter. While stocks of seamless, 12-inch and larger, are sufficient, smaller sizes are readily absorbed to extent of allocations. Mechanical tubing, 1½-inch and larger, is sold into June.

Cleveland — Pipe jobbers' stocks of butt-weld pipe have been increasing of late, reflecting steady receipts from the mills and some slackening of demand due to the seasonal lag in building operations. Tight supply conditions continue, however, and producers do not expect any real easing in the situation before third quarter. Meanwhile, seamless pipe is as tight supply as ever with demand continuing strong. Galvanized pipe discounts have been fluctuating over recent weeks. Last week, leading producers increased their discounts to reflect the half cent decline in the price of zinc to 12.50c per pound.

St. Louis — Pipe demand remains steady and moderately heavy. Second quarter books, opened a week ago, were quickly filled. Pressure is strongest for half, three-quarter and one-inch sizes in preparation for spring housing construction. Utilities are actively in the market.

Los Angeles — Construction of sewers, storm drains, and pipe lines in southern California reached an all-time peak last year with value of \$54,656,177 compared with \$2,668,279 in 1951. Kaiser Steel Co.

No more GAMBLING on tool steel selection"



[1/3 actual size; Selector is in 3 colors]

Here's how it works:

use the Selector, all you need know is the characteristics that come with the job: type and dition of material to be worked, the number pieces to be produced, the method of working, the condition of the equipment to be used.

4 STEPS—and you've got the right answer!

1. Move arrow to major class covering application
2. Select sub-group which best fits application
3. Note major tool characteristics (under arrow) and other characteristics in cut-outs for each grade in sub-group
4. Select tool steel indicated

at's all there is to it!

Here's an example:

Application—Deep drawing die for steel

Major Class—Metal Forming—Cold

Sub-Group—Special Purpose

Tool Characteristics—Wear Resistance

Tool Steel—AIRD 150

One turn of the dial does it!

And you're sure you're right!

That's what one of the thousands of pleased users says about his CRUCIBLE TOOL STEEL SELECTOR, the new, simple, handy method of picking the right steel, right from the start. Since Crucible announced this Selector two years ago, thousands of tool steel users have received their Selectors . . . and here's what some of them say—

"Handiest selector I've ever seen!"

"Saves me time and headaches"

"It's so logical—you begin with the application".

You can be sure the answer you get with your Crucible Tool Steel Selector will be just right in every case, for this Selector covers 22 tool steels which fit 98% of all tool steel applications. And when—with a flip of the round dial—you get the answer, you'll get the steel FAST, too, because all the tool steels on the Selector are right in stock, in all our 26 conveniently-located warehouses.

This Selector is bound to be a big help to you—so write for yours today. There is no obligation whatsoever. Just fill in the coupon and mail now . . . before you turn this page and forget! CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, New York.

Crucible Steel Company of America

Dept. S, Chrysler Building, 405 Lexington Avenue
New York 17, N. Y.

Gentlemen:

Sure! I want my free CRUCIBLE TOOL STEEL SELECTOR!

Name. _____ Title. _____

Company. _____

Street. _____

City. _____ State. _____

CRUCIBLE

first name in special purpose steels

TOOL STEELS

52 years of **Fine** steelmaking

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production of large diameter pipe reduced.

Seattle—Cast iron pipe market slow but supply houses anticipate improved demand within 30 days. Mills are evidently catching up in orders as deliveries to this area have materially shortened in recent months.

Semifinished Steel . . .

Semifinished Prices, Page 109

Los Angeles—Kaiser Steel Co. boosted steel capacity at its Fontana Works from 1,380,000 to 1,536,000 ingot tons annually by completion of a ninth open hearth furnace, a major unit of its current \$100 million expansion program. The addition raised Kaiser's share of western rated ingot capacity to 24.5 per cent, exceeded only by Columbian-Geneva Division, U. S. Steel Corp., 33 per cent.

Structural Shapes . . .

Structural Shape Prices, Page 109

Boston—Allotments for bridges include structural without requiring plate tonnage for specific projects. Larger structural shapes are sold to allotments through second quarter and are extended to August-September on deliveries.

New York—State thruway work features structural activity, with bids closing this week on 9000 tons of approach work for the Hudson river bridge, off Rockland county, and a substantial volume of work in Greene and Montgomery counties coming up for bids Feb. 11.

Philadelphia—Considerable bridge work and other types of heavy construction are before the market but there is a relative dearth of light structural business.

Pittsburgh—Demand is strong for structurals. Fabricators are seeking to bolster inventories in anticipation of active spring and summer business.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 109

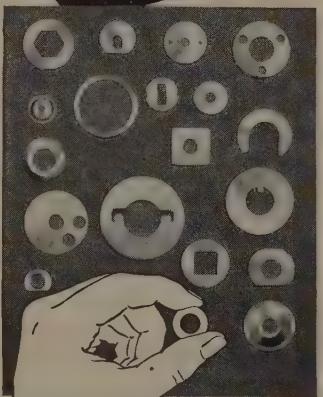
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Steel . . .

Tool Steel Prices, Page 111

WYOMING—Shipments of high and tool steel (excluding hollow steel) declined in November during a four-month upturn beginning during the steel strike last year. November shipments, reported by the American Iron & Steel Institute, totaled 8960 net tons, compared with 10,429 in October and 13,645 in November, 1951. Shipments in the first 11 months of the year amounted to 112,442 net tons, a decline of 49,500 compared with 161,942 in 1950. The decline was experienced in the first half of the year reflecting a catching up of supply with demand prior to the outbreak of the strike in June.

Conversion Steel . . .

Chicago—Conversion arrangements for the production of sheets and bars are still being sought. Leading in the market are automobile builders. Some implement manufacturers are also in the picture too. In most cases some processing is desired. One mill which has been active in conversion has been forced to carry over a large ingot from fourth quarter and has declined to book more orders. Its capacity for conversion slabs has not been fully committed, largely because slabs were not obtainable. Recently, however, the availability of slabs has improved suggesting that some steelmakers find it more convenient to sell their output as slabs rather than cold-rolled

Iron . . .

Pig Iron Prices, Page 108

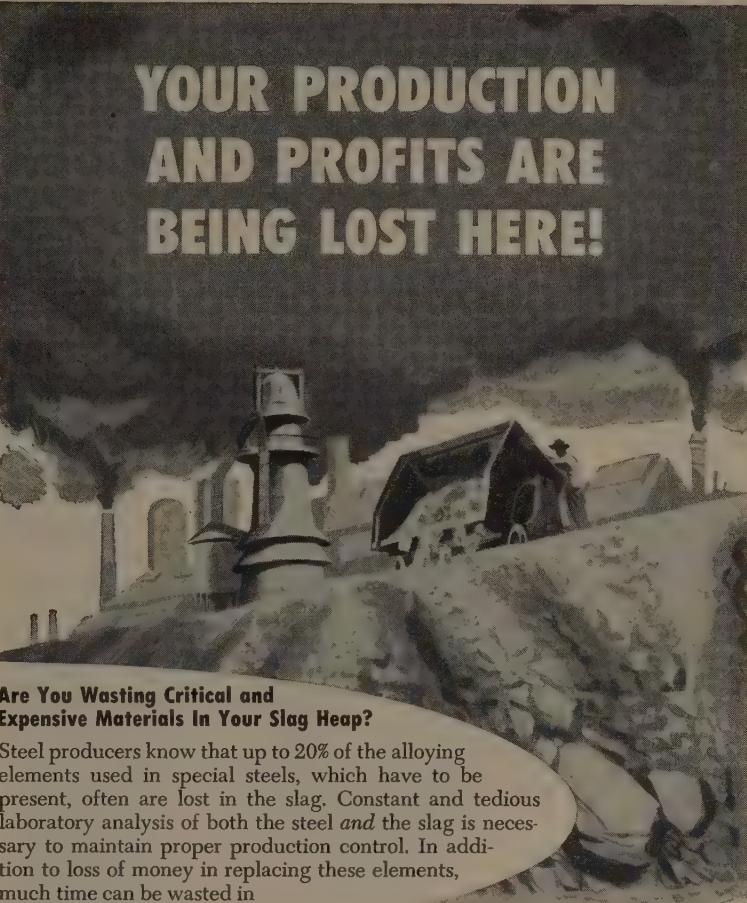
Philadelphia—Basic iron supply is still with some mills scouring the market for such tonnage as they obtain for fairly early delivery. Foreign iron, assuming the prices were not too stiff, would be obtainable, it is said. Supply of dry iron is adequate, especially from a fair volume of southern iron coming into this district and with gray iron foundries operating on a somewhat limited basis.

Boston—Mystic furnace at Everett is again producing after repairs. Demand for foundry iron lags and an increase in melt materializes. Furnace will soon start toward building depleted stocks. Other furnaces continue to offer tonnage here.

New York—Foundry pig iron supply and demand continue in easy balance. Foundry operations are somewhat improved, with resulting ease in consumption. Operations, however, are still well short of normal capacity and supply of iron is, nothing, more than sufficient to meet requirements.

Buffalo—Leading merchant pig iron users have no trouble finding an outlet for their current output. Automotive and home appliance industries continue active buyers. Approximately 80 per cent of current output is going into steel production. Shipments continue substantial from Michigan melters.

Cleveland—Merchant iron sellers



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are disposing of all their tonnage but consumer pressure is noticeably off compared with some months back. This is explained by continued sluggish foundry operations. Even the heavier castings shops appear to be slowing down.

Chicago — Foundrymen are more concerned as to whether the present improvement in orders will hold than they are over materials to get out production. Currently, there is enough of everything except nickel. Pig iron isn't plentiful but there is enough. All but one of the district's 42 blast furnaces are active.

Seattle — Australian pig iron is again competing in the Pacific Coast market after a long absence. More than 1000 tons have been purchased by Seattle and Portland foundries, other tonnages being taken by California and British Columbia buyers. The iron sells at \$3 to \$3.50 under the domestic market. It is understood to be low in silicon and high in phosphorus. Domestic iron is available in fairly large quantities.

Iron Ore . . .

Iron Ore Prices, Page 115

Cleveland — Reflecting the fast pace of blast furnace operations, the Lake Superior Iron Ore Association reports consumption of iron ore by the furnaces in December was 8,219,924 gross tons, increase of 394,276 tons compared with consumption of 7,825,648 tons in November. In December, 1951, consumption totaled 7,639,156 tons.

Total consumption for 1952 was 78,340,223 tons, drop of 11,029,216 tons from the 89,369,439 tons used in 1951. The decline was due almost entirely to the suspension of steel-making operations during June and July because of the steel strike.

Stocks of iron ore on hand at furnaces and Lake Erie docks on Jan. 1 totaled 45,171,753 tons. This was 1,461,094 tons more than the 43,710,659 tons on hand Jan. 1, 1952. As the new year opened 201 blast furnaces were operating, 6 more than a year ago.

Scrap . . .

Scrap Prices, Page 116

Washington — The Office of Price Stabilization amended CPR 5 through amendment 12, effective Jan. 16, restating the definition of scrap broker, and changing the basis of applying the \$1.50 per gross ton deduction from shipping point ceiling prices where the purchaser is required to perform certain operations in moving the scrap.

An amendment to the original order defining a broker appears to have led to some confusion in the matter of payment of commissions in that the modification required a person to be primarily a broker as contrasted with his being a dealer in scrap. Amendment 12 restores the original wording of the order so that the distinction is not between scrap brokers and scrap dealers, but between brokers regularly engaged in the scrap business and persons who

are not regularly engaged in the business.

Further amendment of the order provides that where scrap is sold in terms which require the purchaser to remove the scrap by truck from the premises of the seller a deduction of \$1.50 a gross ton must be made from the applicable shipping point ceiling price. Previously, the deduction of \$1.50 applied where the purchaser was required to load the scrap on a transporting vehicle or place it in a

New York — Scrap brokers are paying higher prices for unstripped motor blocks and are quick to pick up other cast grades offered for sale at unchanged levels. The general tone of the cast scrap market is much improved, due at least in part to buying by the Morrisville, Pa. consumer.

Buffalo — Despite favorable weather the flow of scrap has reached an ebb here. One of the mills is drawing from reserve stocks to maintain ingot production. No apparent reason is given for the drop in new scrap supplies. Meanwhile, cast scrap continues weak as dealers seek out buyers.

Philadelphia — Substantial volume of charging box cast and unstripped motor blocks for Morrisville, Pa., at higher prices than have prevailed in the district recently has firmed up the entire market on cast scrap. Charging box has been purchased by Morrisville at slightly over \$48 delivered, and unstripped motor blocks at \$40 delivered. In addition, Morrisville consumer has been continuing purchases of open-hearth steel scrap.

Pittsburgh — The market in all grades of scrap is sluggish with prime movers electric furnace grades. Little activity is reported in open-hearth and cast grades. Revised buying policy is in the offing. Recently, mills are buying on a short-month-to-month basis and there is more rigid adherence to the policy of completing shipments within 3 days.

Cleveland — With steelmaking operations booming along at capacity the market for steelmaking grades of scrap continues to display strength, although the mills are noticeably more selective in accepting materials. Good quality steel grades are too plentiful and are being sold off by the mills. Turnings are reportedly hard to move but when a tonnage is taken it is still at ceiling price. The cast grades continue weak. Small lots of the better cast scrap command ceiling but large lots were moved go at concessions of \$3 to \$4. The exact market level on unstripped motor blocks is difficult to determine. This material is plentiful and is moving sluggishly. Some dealers think the top for this grade of scrap is \$41, a strictly nominal figure.

Chicago — Open weather is facilitating the movement of scrap in the Midwest. This, plus the fact that supply is comfortable makes for a stable situation. Steel plants have at least 60 days' supply and intake is in close balance with consumption. Steelmaking is at an all-time high. Cast scrap remains stagnant. Supply is great and demand light.

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dal scrap for open-hearth and electric furnace use. Blast furnace industrial demand, however, is weak, only limited quantities currently being purchased. Cast scrap is in weak demand. Stocks at electric furnaces are more comfortable. Some of the recent market activity resulted from buying by out-of-the-mill mills.

Louis—Open-hearth scrap demand continues strong but demand for cast grades is virtually nil. Offerings from railroad and country sources are light. Dealers foresee no up in rails before spring, but anticipate offerings then may be better than usual. Railroads have been short of scrap-gathering labor. Mill stocks range from 30 to 75 days, but poor shipments are steadily reducing them. Steel castings' stocks are unusually good, as high as 90 days.

Birmingham—Scrap steel demand has been down somewhat recently with imports confined largely to tonnage under commitment. The cast iron market is especially slow with cupola stocks the most wanted item, quoted at \$44 to \$45.

Los Angeles—Local steelmaking is in good supply and plenty of remote material is reported available in Arizona, New Mexico and California. Demand is light.

San Francisco—Consumption continues heavy, but steelmaking grades of scrap remain in satisfactory supply. Prices are steady all along the

West Coast—First shipments of steel from British Columbia in four years arrived here recently, indicating an improved supply situation across the border in Canada where import licenses have been unobtainable for a long time. As a whole the steel situation is satisfactory to the steel consumers who are paying \$22 per ceiling for heavy melting, \$31 per bundle and \$29 to \$31 for uncoated motor blocks on which the ceiling is \$43. Bethlehem Pacific Coast Steel Corp. is obtaining 10,000 tons of high grade scrap in dismantling the former Munson liner *South-Cross*.

Warehouse . . .

Warehouse Prices, Page 115

Washington—Dollars-and-cents kups per ton for use in figuring the prices of steel imports in separate categories have been established by the Office of Price Stabilization. Also, percentage markups for warehousing imported steel in line with those provided for domestic steel have been set up. The rates were taken under CPR 31, effective Jan. 21.

Ceiling prices are figured by applying the specific markups to landed cost. Specific markups of \$15, and \$25 per ton are provided for the different categories. The action puts into a single regulation all pricing provisions for imported steel for those covered by CPR 31 and provides a clear method for establishing ceiling prices in line with those for domestic steel. Need for the action is emphasized by industry reports importation has increased almost 10 times over the

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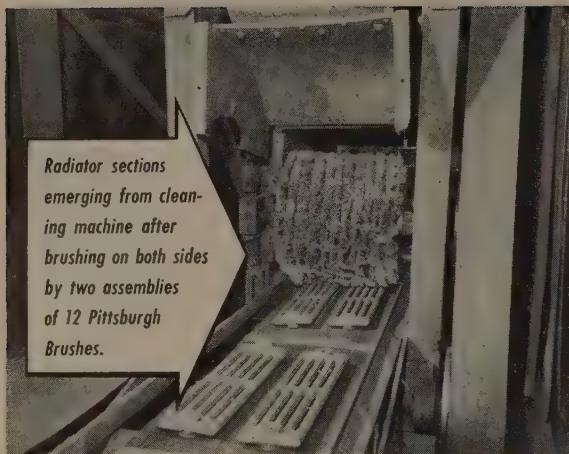
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Preparing Chills—At Continental Foundry & Machine Co., East Chicago, Indiana, chills used to cast iron rolls must be cleaned of the oxidized metal remaining from previous usage, as well as dirt and grease accumulated in storage. After experimenting with other brushes, Continental chose Pittsburgh because they "do the job better and stand up longer than any previously used!"

Improving Original Equipment—The Sommer and Maca Glass Machinery Co., Chicago, Illinois, uses Pittsburgh Brushes in the automatic washing machines they manufacture. Brushes formerly used simply didn't have the over-all density pattern needed. Pittsburgh engineers studied the problem and designed a brush which Sommer and Maca approved "because of (its) denser bristle pattern and lower cost."

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int imported before Korea and a number of new steel import- and new warehousemen of im- ported steel have started in business. **Philadelphia**—Warehouses continue a brisk business in virtually major lines. Plates, shapes, bars sheets are all moving well, except for small hot rounds and galvanized sheets, and in both of these lines, business could be worse. **leveland**—Warehouse order vol- is holding up with no sign pres- of any slackening in consumer requirements. Stocks are a little er but hot and cold-rolled sheets, e-size bars, heavy plates and cer- structural sections are not tiful. Distributors do not antic- much change in supply condi- tions before third quarter. Contrib- g to current strong demand be- experienced is the fact open- ther is permitting building opera- s on a larger than usual season- scale.

icago—Demand is strong for all dard products, there being no in- tition consumers are reaching a e of supply sufficiency.

t. Louis—Warehouse stocks are easing slightly as result of slow- sales and steady receipts from s.

METALLURGICAL COKE . . .

Metallurgical Coke Prices, Page 113

leveland—Spotty operations in the dury industry have not resulted in noticeable easing in demand for a foundry coke. Sellers are dis- ing of all their tonnage though are soliciting business more ac- tly than formerly. Some outside e is coming into this area from far away as Alabama at a de- red price 50 cents per ton over the l market. The tonnage involved, ever, is insignificant. Buyers are ing to pay the premium in order maintain an emergency source of oly.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

tons, power plant, Consolidated Gas, electric Light & Power Co., Baltimore, to Belmont Iron Works, Eddystone, Pa. tons, Medical Center buildings, Camp etrick, Md., noted Jan. 19 issue as going unnamed fabricator, went to Klein Iron Works, Long Island City, N. Y. tons, maintenance-traffic depot and laboratory, State Department of Public Works, ate 9, Wellesley, Mass., to American Bridge Division, United States Steel Corp., Pittsburgh; Canter Construction Co., Bos- ton, general contractor. tons, grandstand addition, Garden State ce track, Camden, N. J., to Belmont Iron Works, Eddystone, Pa. tons, dormitories, Holy Cross College, orchester, Mass., to A. O. Wilson Structural, Cambridge, Mass.; Walsh Bros., Cam- bridge, general contractor; reinforcing bars Tucker & Fox, Boston. tons, substation steel for Bonneville Power administration, to Emsco Mfg. Co., Los Angeles. tons, First National Bank, Philadelphia, to American Bridge Division, United States steel Corp., Pittsburgh.

STRUCTURAL STEEL PENDING

tons, state bridge, over Potomac river, runswick, Md.; American Bridge Division, United States Steel Corp., Pittsburgh, low dier. tons, hangars, air base, Limestone, Me.; ura Engineering & Trading Co., Boston, w.

1200 tons, one-story plant building, Tube Reducing Corp., Wallington, N. J.; bids asked. 900 tons, high school, Siegersville, Pa., bids closed. 800 tons, Washington state Steamboat Slough swing span bridge, near Everett; bids to Olympia, Feb. 10. 750 tons, alert hangars, Smoky Hill Airfield base, Salina, Kans.; bids to Corps of Engineers, Kansas City, Mo., Feb. 5. 500 tons, grandstand addition, Laurel race track, Maryland, contemplated. 350 tons, alert hangars and shops, Truax Airfield base, Madison, Wis.; bids to Corps of Engineers, Milwaukee. 300 tons, tank building, Simplex Wire & Cable Co., Newington, N. H.; this in addition to 650 tons, new building, placed with Bancroft & Martin Rolling Mills Co., South Portland, Me. (STEEL Jan. 12). 300 tons, Washington state Rainier avenue overpass, Seattle; Dahlgren Construction Co., Seattle, low \$1,248,057. 175 tons, state highway bridges, Bridgewater-Raynham, Mass.; bids Feb. 3, Boston. Unstated tonnage, state thruway work, Greene and Montgomery counties, New York, bids Feb. 11; also on that date, another section of the Major Deegan Expressway in the Bronx, N. Y.

REINFORCING BARS . . .

REINFORCING BARS PLACED

580 tons, King county hospital addition, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; J. C. Boespflug Construction Co., Seattle, general contractor. 100 tons, auto maintenance facilities, Ladd Field, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Boen-Sealand Co., Seattle, general contractor. 100 tons, local church and other projects, to Northwest Steel Rolling Mills Inc., Seattle.

REINFORCING BARS PENDING

850 tons, Washington state Rainier avenue viaduct, Seattle; general contract awarded.

290 tons, five state bridges, Amesbury-Salis- bury, Mass.; bids Feb. 3, Boston.

185 tons, four reinforced concrete rigid-frame bridges, Mid-Cape highway, Bourne-Sand- wich-Barnstable, Mass.; bids Jan. 27, Bos- ton.

150 tons, Washington state highway bridge, near Everett; bids to Olympia, Feb. 10.

PLATES . . .

PLATES PENDING

350 tons, 15 tanks, Simplex Wire & Cable Co., Newington, N. H.

PIPE . . .

CAST IRON PIPE PENDING

250 tons, 16, 12 and 10 in., 6250 ft cast iron; also 19,000 ft 10, 6 and 8 in. steel water pipe, hydrants, valves, etc.; bids to Van- couver, Wash., Jan. 26.

STEEL PIPE PENDING

750 tons, 30-inch steel pipe, Newton, Mass.; bids Feb. 5, Metropolitan District Commis- sion, Boston.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Denver & Rio Grande Western, five 1500 hp diesels road-switching units, to Electro- Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Central of Georgia, fifty 70-ton covered hopper cars to Pullman-Standard Car Mfg. Co., Chicago.

Denver & Rio Grande Western, 200 seventy-ton drop bottom gondolas to General Ameri- can Transportation Co., Chicago.

Great Northern, 200 fifty-ton flat cars, to Pa- cific Car & Foundry Co., Renton, Wash. Gulf, Mobile & Ohio, 50 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.



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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

o Make Tubes in Scranton

The Scranton, Pa., plant of General Electric Co. now is known as the Scranton tube plant with management responsibility transferred to the electric sink and cabinet department to the tube department. Corwin is plant manager. Dishwasher manufacturing operations of plant are being transferred tosville, Ky., and the Scranton plant is being converted to tube production.

onal Lead Building Plant

National Lead Co., New York, is building a plant at Edson, Kans., for production of Lorite, a diatomaceous material used as an exterior pigment.

tern Machinery Buys Firm

Western Machinery Co., San Francisco, acquired Smith Booth Usher of Los Angeles, distributor of construction equipment. It will be operated under its own name as a division of Western Machinery.

ustrial Resin Sales Gain

astics Division, Monsanto Chemical Co., Springfield, Mass., reorganized sales department to keep pace with the rapidly expanding markets for industrial resins. Edmond S. Jr. was appointed sales manager of industrial resins and heads a newly created section of the sales department.

al Forge Retools Factory

Buffalo Forge Co., Buffalo, is retooling much of its factory to produce "at prices based on high quality," says Henry W. Wendt, chairman of the board. He reports demand is increasing for the com-

pany's production of industrial air cleaning and air conditioning equipment and a plant addition is now nearing completion.

Instrument Firm Changes Name

Graham-Mintel Instrument Co., Cleveland, changed its corporate name to Cleveland Instrument Co. Inc.

Universal Sheet Opens Warehouse

Universal Sheet & Strip Steel Co. opened its \$1 million warehouse and office building at 4900 S. California, Chicago. The firm is an outgrowth of National Sheet Steel Co., founded in 1939. Sol Fox is president.

White Motor Moves Sterling Plant

Operations of Sterling Division, White Motor Co., are being transferred from Milwaukee to Cleveland. Sterling, producer of heavy duty special trucks, was acquired by White Motor last year.

Screw Products Firm Expands

Michigan Screw Products Co., Detroit, is building a factory and office building at 11 Mile road and Sherwood, Warren township, Michigan. When in full operation, the company's capacity will exceed 40 million fasteners per month.

Chicago Detinning Co. Organized

A new detinning company, Chicago Detinning Co. Inc., was organized to operate a plant at 1500 W. Webster Ave., Chicago. Products of the operations are pig tin and hydraulically compressed detinned sheet steel scrap. Owners of the company conducted detinning operations for three years in Batavia, Ill., under the firm name of Batavia Detinning Co. Officers are: J. Sandman, president; W. G. Midnight, vice

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

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Life for Old Wheels

Tank roadwheels and tracks, once worn beyond repair, now are being built up for resurfacing by a rapid welding and machining process that is expected to bring savings of \$27 million and save 28,000 tons of steel in a national emergency

president and general manager; H. L. Sandman, secretary; and L. L. Sandman, treasurer.

Motorola Forms Subsidiary

Motorola Communications & Electronics Inc. was organized as a wholly-owned subsidiary of Motorola Inc., Chicago. The new company will distribute products manufactured by the Communications & Electronics Division of the parent corporation. Motorola Inc. is building a \$3 million plant in Franklin Park, Ill., that will nearly double the firm's television manufacturing facilities.

Consolidated Vacuum Expands

Consolidated Engineering Corp., Pasadena, Calif., completed the formal acquisition of the vacuum equipment department of Eastman Kodak's Distillation Products Industries, Rochester, N. Y. The facilities will be operated under the name of Consolidated Vacuum Corp., a wholly owned subsidiary of consolidated Engineering.

Utica Radiator Buys Foundry

Utica Radiator Corp., Utica, N. Y., purchased all equipment in International Heater Co.'s foundry and has leased all the buildings in the area for five years, with an option to buy. The deal will change neither operations nor employment of International Heater. Utica Radiator will

transfer its entire foundry operations to the newly acquired buildings which include a fully mechanized cast iron foundry.

Engineering Firm Moves Offices

Harold F. Howard Co., industrial and management engineering firm, moved to larger quarters at 319 Fisher Bldg., Detroit 2.

Appliance Maker Opens Offices

Mine Safety Appliances Co., Pittsburgh, established district offices at Uniontown, Pa., and at Johnstown, Pa. District managers are H. R. Johnson and V. A. Stanton at the respective offices.

Mangaslag To Build Pilot Plant

Mangaslag Inc. proposes to construct and operate a \$1 million pilot plant at Pittston, Pa., to engage in experimental processes involving the extraction of ferromanganese and various other chemicals and metals from steel slag.

San-Equip Inc. Enlarging Plant

Luria Engineering Co., Bethlehem, Pa., is erecting an addition to the factory of San-Equip Inc., manufacturer of septic tank systems, sanitation solvents and gasoline storage tanks, Syracuse, N. Y.

Dodge Expands Facilities in West

Dodge Division, Chrysler Corp., Detroit, awarded contracts for construction of an addition to its assembly plant in San Leandro, Calif. New conveyors will be installed and present assembly lines will be rearranged for more efficient straight line operations. The company is installing paint spray booths, ovens, body assembly fixtures, and other equipment in a

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Cincinnati #3 Hi-Power, Vertical Millier.
Hall Planetary Style D Millier.
Heald & Edwards 12" Hobber.
Heald #54 Internal Grinder.
Sellers 4T Tool Grinder, motor drive.
Sellers 6T Tool Grinder, late type.
Landis 16 x 72 Plain Cylindrical Grinder.
Brown & Sharpe #12 Plain Grinder, re ing mechanism.
Heald #70A Internal Grinder.
Heald #78 Centerless and Cylindrical Grinder, complete.
Heald 42 Borematic.
Jones & Lamson 8 x 31 Thread Grinder.
Heald 72-A3 Plain Internal Grinder.
Lodge & Shipley 16" x 6' single pulley 12 spindle speeds.
American 16" x 8' 3 SCDF, 56" center distance, 1 1/2" hole in spindle.
Blount Model B-1 Special Application 18" x 36" table, 20" swing, 2 1/2" hole in spindle, 54" centers.
Lodge & Shipley 20 x 8, single pulley 12 spindle speeds.
Bradford 20" x 18", 4 SCDF, 12" center distance, Loos change.
Gould & Eberhardt 16" Back Geared Shaper.
Gould & Eberhardt 24" Back Geared Shaper.
Gould & Eberhardt 28" Shaper, gear box.
Smith & Root 16" Spur Gear Shaper.
Fellows 725 Gear Shaper with Spur Guit.
Fellows 612 Spur Gear Shaper.
Brown & Sharpe 3-26 Gear Cutter.
Oliver Template Tool Bit Grinder.
Lodge & Shipley 16" x 126" centers, Lathe, Timken bearing, complete with taper attachment, late type.
Niles 48" x 48" x 16" Double Housing Plane, 16" head, 16" tail, 16" possible drive.
Landis 26" x 168" Plain Cylindrical Grinder.
American 30" x 14" G.H. Lathe, 12 spec.
Monarch 24" x 12" G.H. Lathe, complete.
22" 4 jaw chuck and taper attachment.
American 36" x 40" Lathe, Internal AC Plate Drive, with 4" raising blocks, center distance.
Bliss #58 Drawing Press, 5" stroke.
Gordon 35" Spur Gear, late type.
Pond 84" x 84" x 16" Double Housing Plane, DC motor drive, 4 heads.
Cincinnati #2 Centerless Grinder.
Cincinnati-Bickford 4" column Radial Dril.
Cincinnati-Bickford 3 1/2" Radial Drill.
Hanchett No. 600-80 U.S. Traveling Face Grinder, new 1946, table 72", 1000 rpm, 100 HP, grinding wheel motor.
Baker #217 Upright Drill Press.
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Box, Single Sheathed, 50-Ton	Hoppers, Covered, All-Steel, 70-Ton
Tank, 3,000-Gallon, High Pressure	Hoppers, Twin, All-Steel, 50-Ton, <u>Cross Dump</u>
Tank, 8,000-Gallon, Coiled and Non-Coiled	
	<u>Hoppers, All-Steel, 70-Ton, Cross Dump</u>

Hoppers, All-Steel, 70-Ton, Cross Dump

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D IN ALL PHASES OF SUPERVISORY
EMENT. WRITE BOX 647, STEEL
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an' experience in Plant Management, In-
g. Material planning, machine and plant
g. Material and tool control, quality con-
purchasing, incentives, standard costs,
e budgets, overhead analysis and break-
harts, job evaluation, supervisory responsi-
chart and labor relations. Capable
istrator with excellent record. Write Box
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T MANAGER 15 years' experience in Plant
ement, Production Control, Accounting
ms, Manufacturing Development, etc.
manufacturing plant preferred. Could in-
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L, Penton Bldg., Cleveland 13, Ohio.

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SALES REPRESENTATIVE
WITH SOME ENGINEERING BACKGROUND
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FABRICATING AND ALLIED INDUSTRIES
FOR MID-WEST TERRITORY. SALARY, EXP-
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New, rapidly expanding steel mill now
in operation ready to fill position of
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Cleans any degree of dirty or rusty pipe
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BRIGHT ANNEALING & COPPER BRAZING
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Price \$6000.00

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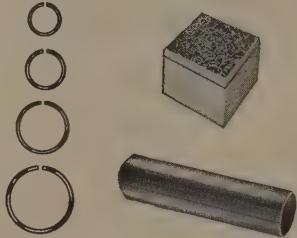
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	Hartford, Conn.		

building recently constructed adjacent to the assembly plant. In the same building, the company will also manufacture aircraft propellers for the Navy and Air Force.

Midcontinent Tube Service Moves

Midcontinent Tube Service Inc., jobbers and distributors of steel pipe and tubing, now occupy new offices and warehouse at 2308 Oakton St., Evanston, Ill.

Newcomer Products Makes Change

Newcomer Products Inc., Latrobe, Pa., is servicing its mining tool customers directly instead of through jobbers and suppliers.

Rolled Alloys Inc. Organized

Rolled Alloys Inc. was organized to continue the development of heat and corrosion resistant alloys previously carried on by Rolled Products Division, Michigan Steel Casting Co., Detroit. The alloys developed are used between temperatures of 1200° F and 2350° F. All of the personnel formerly associated with Rolled Products Division are now with Rolled Alloys Inc., 4815 Bellevue Ave., Detroit. Paul Goetcheus is president.

Forker Names Representative

Forker Corp., Cleveland, manufacturer of Ohio tramrail systems, appointed Stryco Mfg. Co., San Francisco, as its representative.

Powdered Metal Products Expands

Powdered Metal Products Corp. of America, Franklin Park, Ill., is building a plant addition. The project will expand production facilities by 40 per cent. The addition will house new furnaces.

Chrysler Finances Research Program

Chrysler Corp., Detroit, is financing a \$250,000 engineering research program at the University of Michigan, Ann Arbor, Mich. The program is part of the Michigan Memorial-Phoenix project which is a broad investigative enterprise designed to enhance the university's ability to contribute to human welfare in the atomic age. The research program will include a study of the use of radioactive tracers in measuring the wear of various materials, as well as the use of radio-isotopes in determining the atomic structure of materials.

Frasse Erects Warehouse

Peter A. Frasse & Co. Inc., New York, is erecting an office and warehouse building in North Tonawanda, N. Y. The building will permit consolidation of the entire Frasse Buf-

falo operation under one roof, which will be devoted to the distribution of alloy, stainless and cold-finished carbon steels and tubing. Leslie Stetson is district manager.

Dietz Acquires Embury Mfg. Co.

R. E. Dietz Co., Syracuse, N. Y., completed arrangements to acquire the fixed assets and inventory of Embury Mfg. Co., Warsaw, N. Y. Embury, a producer of lanterns, is going out of business. The manufacturing of the consolidated Dietz and Embury lines will be handled entirely at the Syracuse plant.

McGraw To Build Parts Plant

F. H. McGraw & Co., New York, received a contract to build a 250,000 aircraft parts plant in Newington, Conn., for Fenn Mfg. of Hartford, Conn. The plant will manufacture rotor heads and transmissions which will be installed in helicopters.

Tool Firm Completes Project

Chicago Pneumatic Tool Co., Chicago, completed construction of a plant at Ft. Worth, Tex., for manufacture of oil well drilling equipment. The plant cost about \$1 million to construct and equip.

Friedman Heads Extruders Group

Aluminum Extruders Council, Washington, formulated its program for 1953 and elected these officers: President, Leon S. Friedman, National Aluminum Co., Columbus, D. vice president, John Doering, J. S. Thorn Co., Philadelphia; secretary, Robert Katz, Badger Aluminum Extrusions, Brooklyn, N. Y.; treasurer, Isidore Himmel, Himmel Bros. Co., Hamden, Conn.

Pennsalt Appoints Agents

Pennsylvania Salt Mfg. Co., Philadelphia, appointed Henry S. Deadeau and the Cleveland Industrial Co., Cleveland, as representatives for its corrosion engineering products in Ohio and northern Kentucky.

Vanadium-Alloys Buys Plant

Vanadium-Alloys Steel Co., Warrendale, Pa., purchased the London, Ont., plant, formerly owned by Quill Steels Ltd. Acquisition of the facilities completes another phase of Vanadium-Alloys' planned expansion program in the Canadian market. The company recently purchased Murray Steels Ltd., Toronto, Ont., and is operating the firm under the name of Vanadium-Alloys Steel, Canada, Ltd. Jean Paul Elkann, vice president and director of the parent company, will

as president and chief executive of the Canadian company. R. Gray, president of Murray Steels, appointed vice president in charge of sales. Renovation of factory and installation of new equipment is progressing rapidly. Manufacture of high quality tool and specialty steels is expected to begin within months.

hem Steel To Erect Building
Bethlehem Steel Co. will erect an office building in Johnstown, Pa., with completion to begin in the spring. Completion of the building will mark a major one in Bethlehem's \$60 million modernization and improvement program at Johnstown.

anadian Completes Project
Canadian Co., Toronto, Ont., completed additional facilities to production of pilot ejector

oy Appoints Distributor
bility Department, General Electric Co., Detroit, appointed Day Supply & Tool Co. Inc., Dayton, as a distributor of its standard and blanks, masonry drills and hand wheel dressers.

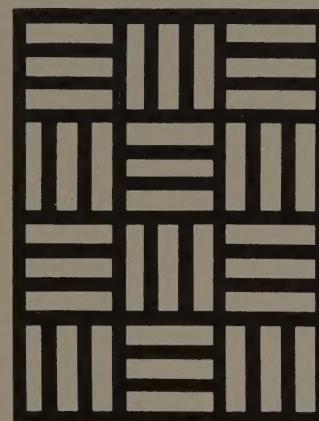
en Buys Paint Plant
lden Co., Cleveland, purchased the Angle-Picher paint plant in Atwood and plans to double its capacity. Glidden also purchased a tract joining land for construction of a new building and finished stock house. The plant superintendent is Walter S. Herner while the factory is headed by Harold G. Ward.

Opens Membership
merican Association of Machine Importers announces a new category of membership—an associate membership open to firms interested in taking a part in organizational activities, but without voting privileges. Memberships are expected to come from insurance agencies, forwarding and shipping agents, custom brokers, and other firms.

Dealers Elect Officers
icers of the Northwest Chapter of the Institute of Scrap Iron & Steel for 1953 are: S. David Greenberg, president; Phillip Greenberg & Co., St. Louis; Bud Davis, West End & Metal Co., Duluth, first vice president; Fred Isaacs, American & Supply, Minneapolis, second president; Martin Bush, Martin Iron & Metal Co., Minneapolis, treasurer; Reuben Kaplan, H. S. Kaplan Iron & Metal Co., St. Paul, vice president.

Hendrick Ornamental

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Perforated Metals
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Hendrick Ornamental—a decorative, lightweight metal grille designed for a wide variety of applications—is furnished in many attractive designs, the one illustrated being "Baskette."

Ornamental is made of a special bright finish, cold rolled steel, suitable for painting or plating, and is available in a broad range of stock size sheets and gauges.

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for Catalog 46



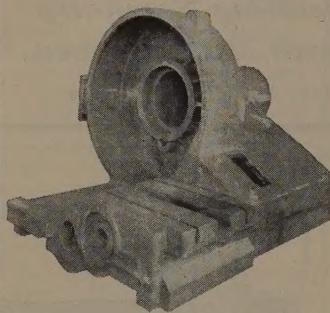
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Castings of any size up to 80,000 pounds. Hyde Park facilities are equal to your every requirement



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GREY IRON CASTINGS

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CLEVELAND helps increase furnace output 10%

DRIVING a conveyor that loads small parts into a punishing service. That's why Commonwealth Industries turned to a long-lasting, sure, trouble-free Cleveland. Set up to maintain a steady, sure furnace-feeding pace, Cleveland helped increase furnace output 10% in one year's time. In addition, labor-savings of \$17,500 were realized over the same year's period.

Wherever Clevelands serve—and you'll find them in most industries—engineers will tell you that Clevelands do their work under heavy loads, continuously or intermittently, no matter how severe the conditions, with a minimum of attention.

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Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.



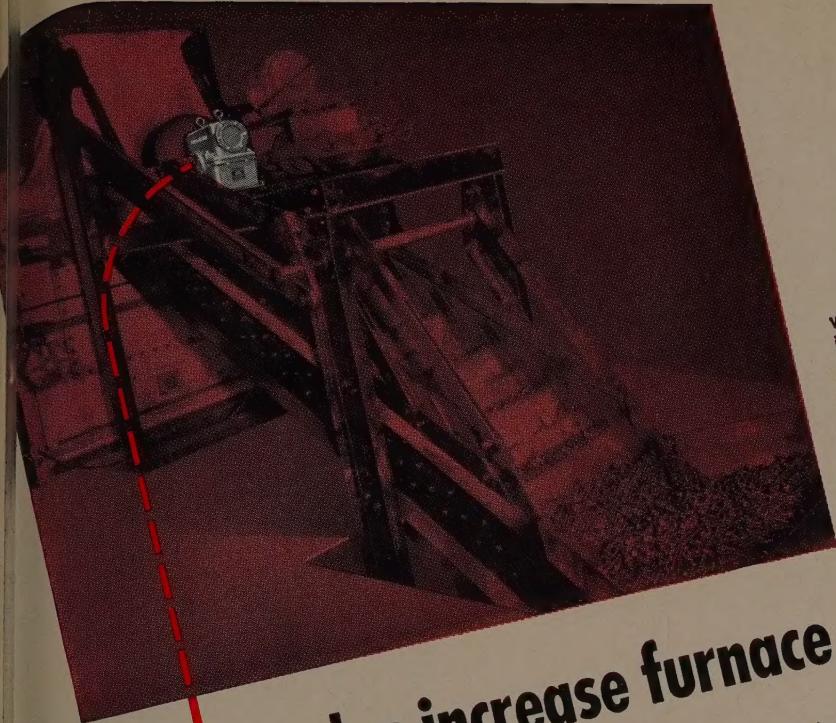
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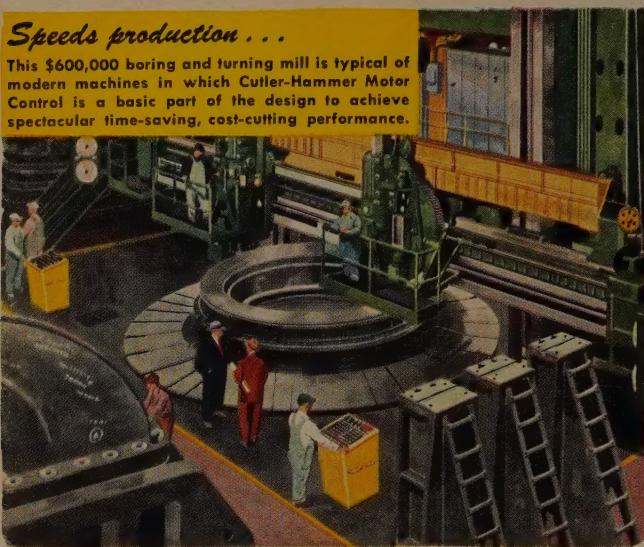
Photo of Michigan Crane & Conveyor parts-loader in the Commonwealth Industries, Inc., plant at Detroit, by courtesy of The Iron Age.



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Speeds production . . .

This \$600,000 boring and turning mill is typical of modern machines in which Cutler-Hammer Motor Control is a basic part of the design to achieve spectacular time-saving, cost-cutting performance.



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Cutler-Hammer general purpose motor control is recommended by a majority of all electric motor manufacturers, is featured as standard equipment by machinery builders, is carried in stock by recognized electrical distributors everywhere.



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